

February 22, 2013

Volume 35 Number 4

[www.processor.com](http://www.processor.com)

Address Changes: (800) 733-3809 or Fax: (402) 479-2193  
Advertising Sales: (800) 247-4880 or Fax: (402) 479-2104

# PROCESSOR

Products, News & Information Data Centers Can Trust. Since 1979

## What About Category 7<sub>A</sub> Copper Cabling?

Siemon's TERA® Remains Today's Highest Performing Twisted-Pair Cabling System Despite TIA's New Category 8 Nomenclature

**AFTER DEBATING THE ISSUE** for three meeting cycles, the Telecommunications Industry Association (TIA) TR-42.7 Copper Cabling Subcommittee recently adopted “category 8” as the nomenclature of their next generation balanced twisted-pair cabling system to eventually support 40Gb/s over a two-connector channel up to at least 30 meters. TIA moving consecutively from category 6A to category 8 has caused confusion in the industry, and many are asking, “What about category 7<sub>A</sub>?”

Data center managers can rest assured that Siemon's TERA end-to-end category 7<sub>A</sub> system ([www.siemon.com/TERA](http://www.siemon.com/TERA)) is indeed an existing standards-based category 7<sub>A</sub> twisted-pair copper cabling system. Moreover, TERA category 7<sub>A</sub> currently offers much higher electrical performance than TIA's proposed category 8 up to 1000MHz.

### A Standards-Based Superset

Traditionally, cabling categories have been based on four-connector channels of 100 meters and are supersets of each other, meaning that a higher category meets or exceeds all of the electrical and mechanical requirements of a lower category and is backward compatible. However, TIA's new category 8 has broken this longstanding rule.

Category 7<sub>A</sub> is the highest grade of twisted-pair copper cabling supported by a published performance standard. It is a popular choice for the European market, and it has been gaining significant ground in the United States and other regions such as Latin America.

Ratified in 2010 by the International Organization for Standardization (ISO) under Amendment 2 of ISO/IEC, 11801, 2nd edition, category 7<sub>A</sub> (class F<sub>A</sub>) is a fully shielded system characterized up to a bandwidth of 1000MHz. It was preceded by category 7 (class F) cabling, which was ratified by ISO/IEC in 2002 and characterized up to a bandwidth of 600MHz. Despite past efforts to align with ISO/IEC international standards, TIA chose not to develop category 7 or 7<sub>A</sub> specifications.

In keeping with the rule of higher categories being supersets of lower categories, ISO/IEC category 7 and category 7<sub>A</sub> standards are supersets of each other and of lower category 6A. In choosing the category 8 nomenclature as an attempt to avoid confusion with



category 7 and 7<sub>A</sub>, TIA has perhaps created more confusion—category 8 is expected to have a different channel topology and will not be a performance superset of category 7<sub>A</sub>. In TIA's defense, the choice of the category 8 nomenclature was not made hastily and alternate naming options would have likely resulted in a departure from the familiar category numbering convention.

### The Better-Performing Option

Due to its fully shielded design, Siemon's TERA® category 7<sub>A</sub> cable provides superior performance over unshielded twisted-pair (UTP) cabling. At higher frequencies, the use of individually shielded pairs virtually eliminates internal crosstalk between pairs and external cable-to-cable alien crosstalk, both along the cable run and at the connector. It therefore easily supports 10Gb/s applications

without any additional mitigation practices like those often required with UTP.

TERA cable's outer overall braid shield also provides additional strength and a low impedance path to ground to protect against low-frequency interference. The inner foil shields conduct high-frequency noise from external sources to ground, providing resistance to electromagnetic and radio frequency interference (EMI/RFI) common in environments such as healthcare and industrial facilities.

Siemon's fully shielded TERA category 7<sub>A</sub> system provides better performance than the TIA's proposed category 8 system at 1000MHz. At these frequencies, TIA's proposed performance limits for category 8 do not meet those specified for category 7<sub>A</sub>. In fact, for every transmission parameter except return loss, ISO/IEC category 7<sub>A</sub> channel and permanent link limits are more

severe than those proposed for category 8 up to 1000MHz. In the case of internal crosstalk parameters, the difference is significant—category 7<sub>A</sub> beats out proposed category 8 performance specifications by more than 20dB.

### Here Today, Here To Stay

ISO/IEC specifies two connector options for category 7 and 7<sub>A</sub>—an RJ-style connector as defined by IEC 60603-7-7 and a non-RJ-style connector, exemplified by the Siemon TERA connector, as defined by IEC 61073-3-104. Backward-compatible with lower category cabling via hybrid patch cords, the TERA connector fits into a standard RJ footprint. It features an isolated quadrant design with unique cable sharing capabilities for running multiple one- or two-pair applications over a single four-pair cabling channel—ideal for analog voice applications in call centers, for example.

While category 8 may now be on the TIA table, Siemon's TERA category 7<sub>A</sub> system is here to stay. The nearly finalized IEC 61076-3-104, 3rd edition, will extend the performance of the IEC 61073-3-104 non RJ-style (e.g. TERA) connector out to 2GHz—the same frequency tentatively proposed for category 8. Unfortunately, the situation of having two cabling specifications specified to 2GHz, with category 8 actually having lower performance than category 7<sub>A</sub>, may create further confusion. Thankfully, ISO/IEC is not considering category 8 as the nomenclature for its next-generation cabling system.

Until the processing capabilities of a 40Gb/s Ethernet (40GBASE-T) application are finalized, it is too early to guarantee 40GBASE-T application support distance for any media. However, Siemon's fully shielded TERA category 7<sub>A</sub> remains the highest performing standards-based twisted-pair cabling system available, along with higher bandwidth capacity, EMI/RFI immunity, and cable sharing capabilities. ■



**Contact:**  
(860) 945-4200 | [www.siemon.com](http://www.siemon.com)

Call (800) 334-7458 to subscribe to Processor or go to [www.processor.com](http://www.processor.com) to read articles and view thousands of products online free of charge to qualified readers.

COMPANY TO WATCH

# What A Clean Data Center Means

Environmental Maintenance Solutions Has Been Cleaning & Maintaining Facilities For More Than 30 Years

**WHEN MAINFRAMES WERE POPULAR**, companies worried about the effect laser printers and burster/collators had on the equipment. As technology has changed, with smaller, higher-density components and more complex and technologically advanced environments, data center cleaning has become more critical than ever. More stringent and widely accepted standards by organizations such as ASHRAE and Uptime only emphasize the importance.

New York-based Environmental Maintenance Solutions has witnessed a lot of changes in mission-critical facilities in the more than 30 years it has been in business, but the company continues to evolve to ensure its cleaning methods meet or exceed newly developed standards. “The more educated we are on the latest equipment, technologies, and industry trends, the better we can adapt our products and services and offer our clients the right solution to meet their needs,” says Jason Gutierrez, EMS vice president.

Cleaning Done Right

EMS provides a range of services based on the type of environment, customer expectations, or specific events.

“EMS technicians are capable of working inside the most sensitive equipment at the board and processor level to remove contaminants,” Gutierrez says. Services include ongoing maintenance or cleaning of equipment



such as server racks, PDUs, CRACs, routers and switches, and other specific devices, he says. Floor systems include raised floor and ESD tiles and the sub-floor or plenum often used for cooling and cable routing.

In addition to ongoing and routine maintenance, EMS specializes in post-construction cleaning, pre- and post-construction planning, and certification. If a disaster strikes a facility, EMS has a dedicated response team and protocols for disaster recovery issues caused by fire suppression discharges, flood, fire damage, or a number of other scenarios, Gutierrez says.

EMS has the expertise to investigate your environment for any issues or potential threats. “During a thorough cleaning, our trained technicians are your eyes and ears with access

to areas of your data center you may never have,” Gutierrez says. He notes that EMS employees are trained to spot problems such as glycol leaks, belt wear, and gaps or leaks in the subfloor void where air is being wasted.

EMS is committed to maintaining the integrity of the industry, Gutierrez says, with products and services that are 100% guaranteed.

**Setting The Standard**

As proof of its ongoing efforts to stay ahead of the latest cleaning standards and technologies, EMS is now a premier service vendor with IBM. “We were hand-picked by IBM Systems and Technology Group (STG) as part of their A-team and are the only mission-critical cleaning service company to be accepted as an IBM Business Partner,” Gutierrez says.

What does that mean for your data center? EMS meets the highest insurance and financial audits and IBM-approved processes, procedures, and equipment standards. Plus, EMS provides a direct link to IBM products, services, and solutions and potential discounts and savings. In fact, EMS can offer data center analysis services at no cost to eligible current IBM customers. The new service portfolio consists

of data center assessments for power and cooling trends and best practices, data center efficiency and optimization, thermal modeling and CFD analysis, and lab analysis for contamination such as zinc whiskers.

**Why Clean?**

When looking to cut costs, data center cleaning can often be left on the back burner. But cleaning is too important to overall data center efficiency to be ignored, and your employees’ time is far too valuable for cleaning. “Just let the experts do what they do best,” Gutierrez says.

“An outside cleaning company will provide proper insurance, experience, and expertise. An outside firm will invest the time and energy into ensuring they use the proper equipment, cleaning agents, and practices to clean efficiently without reintroducing foreign contaminants. And they can help provide a maintenance program that would fit your needs and budget.”

**Company Name:**  
Environmental Maintenance Solutions

**Phone:** (800) 962-3310

**URL:** www.emsclean.com

CASE STUDY

# Committed To Solving Enterprise Storage Challenges



Aberdeen LLC Helps Sony Build A High-Powered Network Capable Of Handling Its Unique Storage Needs

**ON ANY GIVEN THURSDAY** you’ll find directors, cinematographers, and other film and television production professionals participating in workshops at the Sony Digital Motion Picture Center (DMPC) on Stage 7 at Sony Pictures Studios in Culver City, Calif.

Since early June 2012, the DMPC has provided hands-on training of Sony Super 35mm cameras, including its pioneering F65 digital motion picture camera, which supports true 4K resolution with super-sampling 8K image capture. Attendees also learn about production and post-production workflows related to 4K technologies by training on nine individual workstations that each run a different third-party industry application capable of handling the large RAW 4K files the cameras acquire.

Initially, the workstations operated independently with the files loaded to each workstation’s own DAS or internal RAID storage. To produce the real-world, post-production environment Sony desired, the workstations needed to move and exchange the RAW 4K files with one another while performing real-time transcoding, editing, and color-correcting.

DMPC Director Dan Perry says that as the industry moves from film and tape into

a file-based world, Sony wanted a facility where people could learn to use the 4K equipment and the related workflows associated with production and post-production.

To make the facility a reality, Sony called on Aberdeen LLC, which configured a storage network to handle the feat. “With Aberdeen, we were able to bring in what would be considered a real-world facility where we are able to move and exchange files between the different workstations.”

**Smoke & Mirrors**

“Prior to Aberdeen’s involvement,” says Steven Cohen, Aberdeen senior account executive and media and entertainment industry veteran, “the DMPC demonstrated production and post-production workflows in a kind of ‘smoke and mirrors’ approach, as the workstations functioned independently and files didn’t actually move through the processes in a realistic manner.” Aberdeen’s solution connected the workstations via a high-speed operating system independent network that could handle simultaneous reads/writes of 400MBps.

The result was a unique configuration featuring Aberdeen’s own Linux NAS, a 96TB

AberNAS N51L device fine-tuned for the environment, and enterprise-level hard drives. A 10GbE and fiber network infrastructure connects the third-party workstations, which hit a single 10GbE switch that aggregates 40GbE bandwidth into the AberNAS device.

**Incredible Performance**

Aberdeen’s engineers faced several challenges, including integrating support for NFS, AFP, CIFS, and other storage access. “The tweaks had to work for . . . PCs, Macs, and Linux systems because there’s a whole mix of them in place at the DMPC,” Cohen says.

In addition, some workstations had limited processing power, RAM, and hard drive speed that hindered streaming content. Aberdeen collaborated with the third-party companies to initiate changes that resulted in incredible performance. “The workstations can now stream the content directly off the Aberdeen storage at 2K and 4K,” Cohen says.

“Aberdeen played a major role in finding the right glue pieces, the switches and the fiber cables and a lot of the other pieces that make it a system and in brokering the relationships to acquire the pieces,” Perry says. “From there,”

he says, “it was a matter of tweaking both the hardware and some of the glue pieces to make it [the network] fast enough to where we could use it in an effective endeavor.”

“Response from the DMPC has been a lot of gratitude that we are able to bring something like this to the community because it’s something that’s needed. As the industry moves toward digital, the DMPC enables learning the processes involved in a lab setting before going to a production site and trying to attempt it there,” Perry says.

“Overall, the connectivity and real-world aspect that Aberdeen helped facilitate took the DMPC to the next level,” Perry says.

**Aberdeen Custom Solutions**

“Moving forward, Aberdeen has a lab setting where it can demonstrate to software vendors that it is capable of building hardware, not only for storage but also servers for applications, GPU, etc. Additionally, Aberdeen can supply vendors with the best tools for their software to run on.”

- Aberdeen’s Steven Cohen

(800) 500-9526 | www.aberdeeninc.com

FEATURED PRODUCT

# Products Prepared For Real-World Use

Server Technology & PDU's Direct Know The Importance Of Product Testing

**MOST COMPANIES PERFORM** some form of testing on their products to ensure that they are in good working condition before being shipped to customers, but Server Technology, experts at producing the highest standard of quality PDUs, goes above and beyond basic testing with its 100% Product Performance Testing. The process includes putting each product through a series of tests designed to push it to its limits, which results in high-quality products with low failure rates.

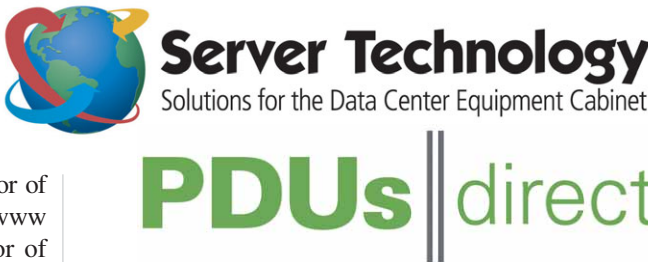
The reason Server Technology decided to perform these tests on every product for 27 years is much simpler than you may think. “The worst thing for a customer is to open a box, plug a product in, and it doesn’t work,” says Jim Scherr, director of sales and operations at PDU's Direct (www.pdusdirect.com), the master distributor of Server Technology PDUs. “The overarching reason for doing the power testing is simple: to make sure that any product that leaves our building functions as per designed and meets all the criteria of the customer. We’re committed to always providing the quality and value that our customers expect.”

The first and foremost benefit of Server Technology’s 100% Product Performance Testing is that customers can have peace of mind knowing that the products powering their mission-critical devices work as

designed and have less of a chance to fail, according to Scherr. Server Technology’s major goal is to help keep their customers’ physical infrastructure up and running so they can be as productive as possible.

### Testing From Beginning To End

With 100% Product Performance Testing, it isn’t just a matter of testing a product after it’s completely built. In fact, these products are tested throughout the manufacturing



process to make sure any possibly defects or other issues are caught early on to prevent a potential domino effect later down the line. And if a product fails at any step along the way, changes are made and the testing process at that level starts all over again. “It’s good for us to know early on if there’s a problem because we can fix it here at our manufacturing facility, which is so much better and quicker than trying to fix issues or problems in the field,” Scherr says.

The variety of tests performed on the products run the gamut from thermal, shock, and vibration testing to compliance with ATE (Automated Test Equipment) tests, as well. It all leads to the final tests, which are designed to test the product in real-world applications and make sure they are ready for the customer once and for all. All tests are performed in a state-of-the-art Power Lab.

“All products are tested at all stages, starting from when the product is in its infancy to when it has become finalized,” Scherr says. “Just before it goes out the door after the final modification, we test it once again. We don’t just test it by plugging it in and making sure the lights come on; we plug it in and we load every receptacle. We just want to make sure

that, functionally, the product fully works under the conditions it will see in the future.”

### A Partnership Between Manufacturer & Customer

PDU's Direct sells a wide variety of Server Technology products, including basic, switched, and metered Rack PDUs, and all of them go through the 100% Product Performance Testing process. It’s a combination of well-built, easy-to-use products and a

degree of testing that isn’t often seen in the IT industry. Current customers notice this because, according to Scherr, they “really appreciate the due diligence being done prior to them getting the products.”

And Server Technology, along with PDU's Direct, sees its relationship with customers as a mutual partnership, which is why 100% Product Performance Testing was put into practice in the first place. These companies strive to provide the best products available with the highest amount of testing and lowest failure rates so that their customers can focus on running their businesses instead of fixing infrastructure issues.

“The quality, reliability, and performance of our products are the most important benefits—to our customers and to us,” Scherr says. “It’s what we’ve built the company on and what we stand for every day.”

### SERVER TECHNOLOGY 100% PRODUCT PERFORMANCE TESTING

(800) 835-1515  
www.servertech.com

Tests products at every step, from inception to production to sale, to ensure the highest quality and lowest failure rates possible.

CASE STUDY

# Answering The Call For High-Availability Storage

Area Data Systems Helps ScaleMatrix Reach Its Cloud Offering Goals

**CLOUD SERVICE PROVIDER** ScaleMatrix works to bridge the performance gap between customer expectations and technological realities. One of its goals is to lower the cost of its solutions to be able to better meet the needs of its customers.

Investing in storage solutions with high availability, fast read/write times, and large capacities is one way ScaleMatrix has been able to attain this goal. The company recently partnered with Area Data Systems to build the perfect storage solution comprised of three separate products that work together to give ScaleMatrix the performance, availability, and cost-effectiveness its customers require.

### A Three-Pronged Solution

For more than 25 years, Area Data Systems has been architecting storage solutions designed to meet the often lofty requirements of its customers. Area’s technical storage experience, ability to provide an end-to-end proof of concept, and thorough real-world testing allows the company to meet most challenging storage design needs.

When it came to building a solution for ScaleMatrix, Area Data Systems knew that

it had the right combination of components to put together a 99.999% reliable HA massive tiered storage solution, all at a price point that would help ScaleMatrix aggressively price its cloud offerings.

ScaleMatrix wanted to use NexentaStor as the basis of the dual-clustered node storage system, which was one of the reasons it chose Area Data Systems. “We saw the relationship that Area Data Systems had already fostered with Nexenta in that they were a preferred partner,” says James Heller, marketing director at ScaleMatrix. “They already had expertise building out this platform for other customers, so it only made sense for us to go down that path with a trusted source.”

NexentaStor is particularly proficient for cloud-based offerings because of its scalability, overall efficiency largely due to the inclusion of ZFS technology, and built-in data protection capabilities. Plus, Area Data Systems knew it could tune the NexentaStor software to work well with the STEC SAS solid-state drives that would be used in the system, which the company chose for their quality and speed.

With the NexentaStor platform and the STEC SSDs, the third piece of the solution

is the DataON OS-agnostic JBODs that provide the mass storage. The system also takes advantage of the DataON Disk Shelf Management (DSM) 3.1 monitoring solution that helps the user spot hard drive failures and detect the drive’s location within the array. With these three separate products combined, Area Data Systems was qualified to help ScaleMatrix implement the solution.

### Immediate Benefits

After putting the solution in place, ScaleMatrix noticed immediate benefits. “For a lot of our customers, the biggest performance requirement is IOPS,” Heller says. “With the Area solution, we were able to blow those out of the water.” In fact, ScaleMatrix was able to provide one customer with a sustained 150,000 IOPS.

In addition to performance, through its focus on cost efficiency and its partnership with Area Data Systems, ScaleMatrix was also able to provide its services at a lower cost. The company developed an industry-first Transparent Pricing Tool for its cloud offerings. With this tool, customers are able to see exactly where their money is going,

which is something that other cloud providers sometimes try to hide.

ScaleMatrix was also able to offer the tiered cloud services it previously envisioned. Instead of having a one-size-fits-all approach, companies can choose to have a spinning disk, hybrid, or full SSD storage solution for their cloud environment. This ability to scale up or down is due to the flexibility of the solution offered by Area Data Systems.

The partnership between ScaleMatrix and Area Data Systems didn’t end with the initial 400 to 500TB installation. The installation is now at more than a petabyte between ScaleMatrix’s onsite solution at its San Diego location and one at its backup facility.

If ScaleMatrix needs more capacity or wants to retool its solution, it knows that Area Data Systems can help. “Area Data Systems has definitely been helpful through the entire process of getting our storage platform up and running and bringing it to a production-ready environment,” Heller says.



### Area Data Systems

Provides tailored storage designs that take advantage of the NexentaStor unified storage management platform for scalability, high performance, virtualization support, and bullet-proof data integrity.

(714) 993-0300 | www.areasyms.com

FEATURED PRODUCT

# Cooling That's Effective, Affordable & Energy-Saving

Evaporative Cooling Completely Eliminates Need For Compressor-Based Systems

**ONE OF THE BIG NAMES** in server manufacturing recently released a new generation of servers that will work very well under the new ASHRAE TC 9.9 guidelines for data center design and operation.

This new generation of servers can handle temperature extremes of up to 45 degrees Celsius, or 113 degrees Fahrenheit, for up to 90 hours per year. One of the rationales behind marketing the server at those conditions was to allow fresh air cooling in virtually the entire continental United States. Other research has indicated that the servers can

operate 87% of the year in Washington, D.C., using fresh air cooling alone.

**Energy-Saving Potential**

The energy-saving potential of raising the inlet temperatures that high can be enormous. Instead of running chillers or compressors 8,760 hours a year, they are only operating 1,138 hours per year.

It's difficult to put that into numbers, but here's a little example:

If the server power consumption is 300 watts, then the cooling system must

remove 300 watts times 8,760 hours per year or 2,628kWh of heat (8,961,480 BTU). That can be accomplished using mechanical cooling, fresh air cooling, or a combination of the two.

A pretty efficient compressorized HVAC system will remove about 4.5 watts of heat per watt of electrical energy used. So to cool the new server using mechanical cooling will require 2,628,000 watts of heat divided by 4.5, or 584kWh of compressor power.

To cool that same server using fresh air for 87% of the year will only require 75.8 kWh of compressor power. Of course, the fan energy stays the same in both cases, but the compressor savings of 508.2kWh per server can really start to add up.

At an aggressive electric rate of 4.5 cents per kWh, that amounts to \$22.87 per server per year. At modest densities of, say, 40 servers per rack, the savings amounts to \$915 per rack per year. Now consider how many racks are in the typical server room or data center. If the data center has a server load of 1mW, then a density of 40, 300-watt servers per rack will translate into 83 racks. So the annual savings would be almost \$76,000 in this example.

## MESTEX AZTEC EVAPORATIVE COOLING SYSTEM

(214) 819-5262  
www.mestex.com

Can be configured to provide indirect evaporative, indirect/direct evaporative, or evaporative cooling with DX (direct expansion) or ChW (chilled water) supplemental cooling.




**MESTEX**  
A Division of Mestek Inc.  
4830 Transport Drive | Dallas TX 75247

### Even Greater Savings

To make the savings even greater, you could use the Aztec ASC indirect evaporative cooling system. Using the Aztec system completely eliminates the compressor-based cooling, adding another \$3.50 per server per year of savings. That would add another \$11,620 per year in savings for a total annual savings of \$87,620 in this example.

Of course each climate and data center is different, and Aztec analyzes each case. But the reduction in operating costs are significant in every case that Aztec has studied.

Aztec and its sister company, Alton, have been in the evaporative cooling business for 66 years. Many of the evaporative cooling technologies that are just now being introduced to the market were developed more than 20 years ago by Aztec. Our experience, combined with our state-of-the-art controls, can assure you of the most efficient evaporative cooling solution available. 



## CPS, LLC U-X3 Universal AC Power Switch



Computer Peripheral Solutions, LLC manufactures numerous products that are targeted towards very economical problem resolutions and increasing efficiencies within various niches in today's networking, such as local and remote controlled power devices, remote switching, telephone line sharing and dial security. They can be used in a variety of applications such as kiosks, monitoring equipment, security systems, observatories and lab/test centers, to name a few. Most units offer several different types of control, for example: USB, Wireless, ring count, touch-tone, cell and web. The products range from a single box to the more flexible and scalable modular systems.

The U-X3 (pictured above) is an economical, but extremely flexible AC power control device that can be used to control the AC power to three different devices via Ethernet, USB or Wireless.

The products were developed as a result of specific user requirements, others as OEM products while still others evolved solely on speculation. This has resulted in a rather diverse product line and has also served to expand the company's technology base.

Contact: (800) 888-0051 | www.cpscom.com/pm

## TEMPERATURE@LERT CELLULAR EDITION

- Remotely monitor your critical data center environment with Temperature@lert's new Cellular Edition.
- Monitors the temperature (and optional humidity) every 5, 15, or 60 minutes
  - Notifies you via phone call, email or text message of any changes in room temperature
  - Completely independent of your existing infrastructure: no phone line or Internet installation needed
  - All-inclusive monthly monitoring plans start at just \$15 with no annual contract



(866) 524-3540 | www.temperaturealert.com

## HM CRAGG EATON ePDU

- Designed for high-density, mission-critical server applications, the Eaton Advanced Monitored ePDU available through HM Cragg provides maximum power for both standard and blade servers. Employing multiple configurations, the Easy-Read LCD screen and remote power management with distinctly colored circuits, the ePDU ensures easy management and monitoring down to the outlet level.
- Vertical and horizontal mounting options
  - Rugged industrial construction and design
  - EMI/RFI and Spike/Surge suppression available in most models
  - Products can be customized to fit your needs including military COTS and data center applications

Best For: High-density, mission-critical server applications.



(800) 870-2248 | www.hmcragg.com

## SEPATON SEPATON S2100®-ES3

The Sepaton S2100®-ES3 delivers the fastest backup and recovery in the world.

For IT organizations that manage extremely large data volumes, Sepaton delivers the fastest, most scalable and most reliable enterprise backup and recovery solution in the world. Sepaton delivers up to 400% faster performance than the nearest competitors, moving data to safety at an unmatched 43.2 TB per hour! The industry's largest single system capacity protects up to 2 PB of data – much more after deduplication.

Sepaton easily handles massive data volumes, seamlessly scales performance and capacity to accommodate rapid growth and consistently meets the tightest backup windows.



(508) 490-7900 | www.sepaton.com

## RLE TECHNOLOGIES FMS-FACILITIES MONITORING SYSTEM

The FMS is a feature-rich environmental monitoring system offered at a very competitive price point. Commonly used to monitor equipment status and summary alarms as well as sensors for temperature, humidity, current, voltage, and more, the FMS hosts its own web pages – access the FMS through a web browser to view data and configure the system. The device has no internal moving parts – no hard drives or fans – so it is highly reliable: no crashed hard drives and no downtime! System integration is easy – the FMS is third partner savvy / vendor neutral, so integration options are limitless. Contact RLE for an FMS demo today!

http://rletech.com/product/fms/




(800) 518-1519 | www.rletech.com

TOTAL CABLE SOLUTIONS  
UNIVERSAL PATCH™

Universal PATCH™ makes your job easier. With smart numbering, high density modules and an extreme modular design, the PATCH™ is the answer to your data center's most nagging questions.

- Modular design features interchangeable brackets to accommodate most major label (i.e. Corning) form factors.
- Customized system matches up to most major label plates (i.e. Brocade, Cisco).
- Up to 64-Port duplex LC fits in a 1U design maximizing space savings.
- Saves rack space with no need for additional cable management



(888) 235-2097 | [www.TotalCableSolutions.com](http://www.TotalCableSolutions.com)

Do you have excess equipment?

Post it for sale on Processor.com!

It's as easy as:

- On the Processor.com home page, click Used/Refurbished Equipment.
- Choose Post A Free For-Sale Listing.
- Follow the on-screen directions from there!



(800) 247-4880 | [www.Processor.com](http://www.Processor.com)

Attention Data Center Professionals

Where do you go to find the newest products available?

Check out each issue for . . .

- Information on companies you need to know.
- Quick rundowns of new data center-related products.
- Articles with valuable product overviews and data.

. . . then go to Procesor.com and take advantage of our online search tools to find even more in-depth information!

PROCESSOR

Processor

Subscribe Today!

Call (800) 334-7458

Subscribe Online!

Go to [www.processor.com](http://www.processor.com)

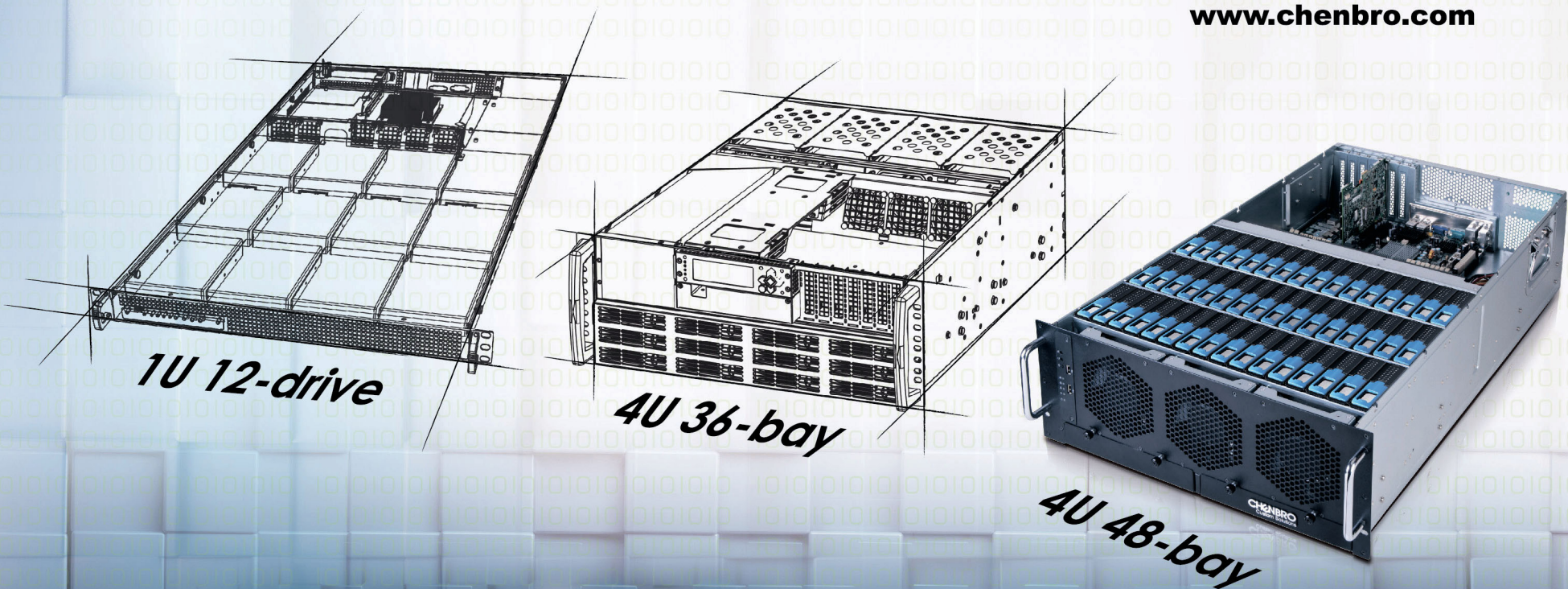
Data Center | Power | Cooling | Storage  
Wireless | IT | Networking | Racks  
Servers | Security | Flooring

Processor is the industry's most comprehensive source for:

- Snapshots of new data center and IT hardware and software
- Rundowns of major industry news
- Information on manufacturers and resellers
- Tips, strategies, and advice from experts in the field



**CHENBRO**  
www.chenbro.com



High Density

Custom Solution



# High Density Storage Server Chassis

SAS Expander Card

High Capacity



CK22803

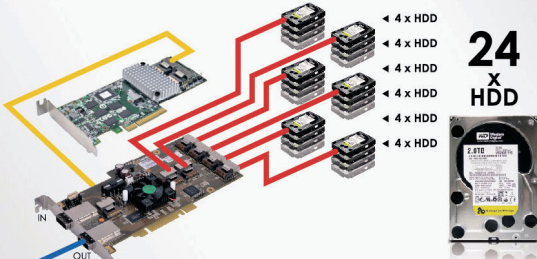
CK23601

CK22804

## CK23601

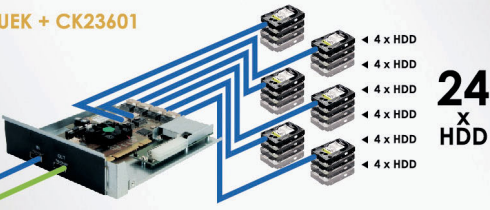
6Gb/s 36-port SAS Expander Card

RAID Card + CK23601



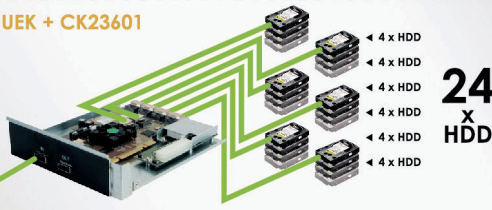
Host

UEK + CK23601



JBOD1

UEK + CK23601



JBOD2

## CHENBRO MICOM (USA) INC.

Add: 2888 E. Spruce St. Ontario, CA91761, U.S.A.  
Tel: 1-909-947-3200 Fax:1-909-947-4300  
Toll Free: 1-866-364-8264  
E-mail: usinfo@chenbro.com

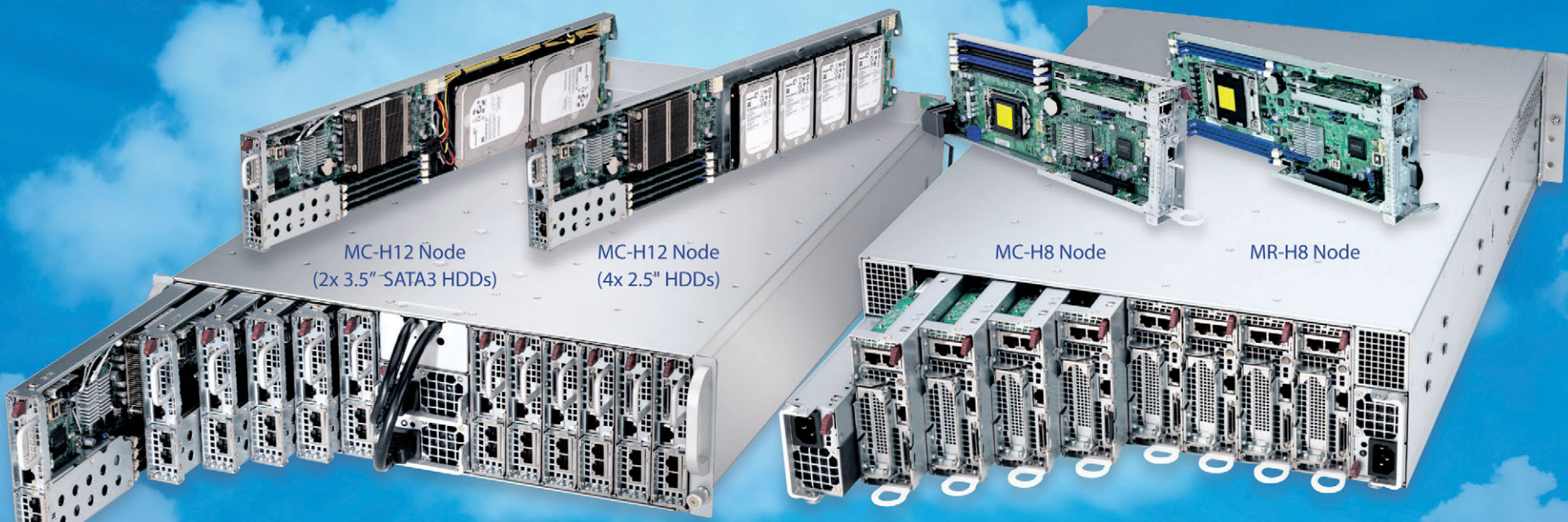


SUPERMICR<sup>®</sup>

# MicroCloud

## 12/8 Modular UP Server Nodes in 3U

High-Density, High-Performance, High-Efficiency, and Cost-Effective;  
Easy-to-Service, Space Saving, Optimized for Cloud Computing and Web 2.0



### 12 Hot-pluggable Nodes in 3U (Front I/O)

SYS-5037MC-H12TRF  
A+ Server 3012MA-H12TRF

### 8 Hot-pluggable Nodes in 3U (Rear I/O)

SYS-5037MC-H86RF  
SYS-5037MC-H8TRF  
SYS-5037MR-H8TRF  
SYS-5037MCR-H8TRF (OEM)

- High density with 12/8 hot-pluggable UP nodes in 3U
- Excellent expansion capability with 1 PCI-E 3.0 x8 LP slot per node
- Up to 2x 3.5" or 4x 2.5" hot-swap SATA 3.0 (6Gbps) HDDs per node
- High efficiency Platinum Level (94%) 1+1 redundant power supplies
- IPMI 2.0 remote management plus KVM with dedicated LAN per node
- Intel<sup>®</sup> Xeon<sup>®</sup> processor E5-2600 and E3-1200/1200 v2 product families
- 130W high-performance CPU support available

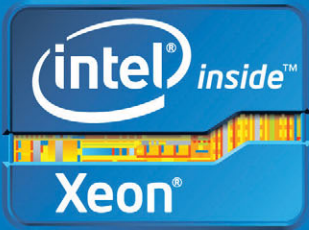


CeBIT 2013

March 5-9<sup>th</sup>, 2013

Hannover, Germany  
Hannover Messe

Come visit our booth @ Hall 2, Stand E57 (E50)



[www.supermicro.com/MicroCloud](http://www.supermicro.com/MicroCloud)

© Super Micro Computer, Inc. Specifications subject to change without notice.  
Intel, the Intel logo, Xeon, and Xeon Inside are trademarks or registered trademarks of Intel Corporation in the U.S. and/or other countries.  
All other brands and names are the property of their respective owners.



BayTech®

||||

www.baytech.net

33 Years Made in the USA

## Automatic Transfer Switch—ATS



### Standard Features

- Out-Of-Phase Source Switching
- 8-15ms Switching Time
- Programmable Dropout Voltage
- Programmable Switchback Voltage
- SNMP And HTTP With DS-Series
- PCB-Based Reliability
- Reports Volts, Current, Watts, VA
- Break-Before-Make Transfer

### Provide Redundancy To Single-Corded Devices With The Ability To Switch Out-Of-Phase Sources In 8 To 15ms.

Providing redundancy on the power-circuit level is critical to maintaining uptime. The ATS Series provides a simple and reliable solution for automatically sensing power loss and seamlessly switching to a backup circuit. BayTech ATS transfer switch line offers a unique approach to performing the transfer by completely severing the connection between the source and load then waiting for the zero-crossing to perform the transfer. This is the driving force behind being able to perform out-of-phase transfers with a low-cost

solution. Monitoring Power on the ATS is a unique feature which provides information about:

- Amperage Load
- (Watts) True RMS Power
- Volt-amps
- Voltage
- Internal Temperature

By combining the ATS and the DS-Series, console server alerts on power and transfers can be sent via secure SNMP V3.

Bay Technical Assoc. Inc. 5239 A Avenue Long Beach, MS 39560 Tel: 228-563-7334 Fax: 228-563-7335 sales@baytech.net

hergo®

RELIABILITY

NOT AN OPTION

IT'S BUILT-IN

#1 SOURCE for SYSTEMS FURNITURE and ENCLOSURE CABINETS + EVERYTHING IN BETWEEN

1

2

3

4

5

6

7

8

9

10

CALL TODAY!

hergo.com

hergo®

888.222.7270

hergo.com

Multi-Frame Workstations

Control/Command Centers

Motorized Workstations

PACS - Mobile Systems

Enclosure Cabinets

Relay Racks

GSA Contract # GS - 29F-0133G

56-01 55th Avenue, Maspeth, New York 11378

Terms, specifications & appearance are subject to change without prior notice • © 2012 hergo®

The numbers are provided as reference when discussing specific images.

# CAN YOUR PDU PIVOT?

## TRUE INNOVATION. ONLY FROM SERVER TECH.



You've never seen anything like this before. Introducing the PDU Power Pivot™, the patented newest innovation from Server Tech, inventors of the Intelligent PDU. The PDU Power Pivot's incredibly flexible design with a 90 degree rotatable power cord makes it the ultimate PDU for multiple racks and multiple facilities. See it in action today. Visit us at [www.servertech.com/PDUPowerPivot](http://www.servertech.com/PDUPowerPivot)

 **Server Technology**  
Quality Rack Power Solutions  
[www.servertech.com](http://www.servertech.com)  
1-800-835-1515



A 90 degree user rotatable power cord simplifies PDU mounting.

©2013, Server Technology, Inc

# You can't buy Concentration *or can you?*

Buy a UCoustic™ Quiet Server Rack Today

ISO 9001:2008



 **RACKMOUNT**  
SOLUTIONS

866-207-6631  
[sales@rackmountsolutions.net](mailto:sales@rackmountsolutions.net)  
[www.rackmountsolutions.net](http://www.rackmountsolutions.net)

The UCoustic™ series quiet rack comes in 42, 24 and 12u. In stock.



# DATA CENTER GROUND BONDING & UPTIME

Protecting Equipment from Damaging Electrical Disturbances

Code compliance and noise mitigation require grounding of IT equipment to the signal reference grid. Having grounding sources at different potentials can lead to ground loop currents through IT equipment, and electronic equipment failure. Having an equipotential ground plan significantly reduces the potential for ground loop current.

## INCREASED RELIABILITY

**Electrical Disturbances:** Data center equipment is sensitive to electrical disturbances. While minimum grounding requirements are designed for personnel safety and fire prevention purposes, data center downtime and damage to equipment as a result of inadequate grounding can cost an organization millions of dollars.

## INCREASED EFFICIENCY

**Electrical Noise:** In a data center, electrical noise introduced on data cables when surges are not properly dissipated by the grounding system, resulting in faulty data signals, lost data and network inefficiencies. Rack ground bonding improves data transmission efficiencies by reducing the “noise” polluting the computer network.

*Establish electrical continuity throughout racks and cabinets for safety and electrostatic discharge (ESD) protection, and proper grounding and bonding of network equipment.*

According to insurance industry data, improper grounding of communication systems leads to \$500 million per year of damage to property and/or equipment due to lightning.



Mention this ad and receive a free rack ground bonding kit!

Offer ends March 31, 2013



Lightning strikes 40-50 times a second, nearly 1.4 billion times a year.

PDU Cables now offers a complete line of ground bonding kits, including custom lengths and multiple lug options, call today or email us for a free kit, or visit our web site for more information.

866-631-4238

[sales@pducables.com](mailto:sales@pducables.com)  
[www.pducables.com](http://www.pducables.com)

PDU  Cables™  
connect with us™

Free sample kit offer limited to one per company.



FirstLine® P and battery cabinet

**FIRSTLINE® P**  
**65-125kVA**

**Parallelable, Three-Phase  
Double-Conversion  
On-Line UPS**



- Affordable
- Up to 98% Efficient
- Reliable
- Flexible

from  
your tailored  
power  
solutions  
provider™

**STACO  
ENERGY®  
PRODUCTS CO.**



InfraPower®

PDU Inspired by Your Data Center

Intelligent kWh PDU

Key Features

- kWh and Amp monitoring
- Switched & Monitored models
- Outlet-level measurement
- Daisy chain ports up to 16 levels
- Patented IP Dongle for IP Cost Saving
- SNMP traps and email alerts
- GUI management software
- Field replaceable meter with 1.8" LCD
- Tool less Mounting
- Temp-humid sensor port x2
- Circuit breaker monitoring
- Customization on request
- NEMA 110V / IEC 208V

Option : Surge Protection

EMI Filter

LINK

OUT

TH 1

TH 2

Main

Amp: 21.1

A: 9.2

B: 11.0

kWh: 2.32

Volt: 110.0

T1: 65.0°F

T2: 76.0°F

InfraPower

AUSTIN HUGHES

Austin Hughes Solutions Inc.

8668 Thornton Ave, Newark, CA 94560

inquiry@austin-hughes.com

www.austin-hughes.com

1-510-794-2888

Need Portable Cooling?

Call the Specialists

MOVINCOOL

PREFERRED DISTRIBUTOR

MovinCool, SpotCool & Office Pro are registered trademarks of DENSO Corporation.

Call 800.972.6600

Primary, supplemental or emergency cooling for data centers, server & telecom rooms

• Portable and ceiling-mount models • Offices nationwide • On call 24/7

Atlas Sales & Rentals, Inc.

THE PORTABLE COOLING & HEATING SPECIALISTS

www.AtlasSales.com

New white paper available!

Applying the K.I.S.S. Principle to Data Center Cooling

Did you know the "K.I.S.S." ("Keep it Simple, Stupid") principle applies to cooling data centers and server rooms? Learn how to use portable equipment for simple, economical, permanent solutions to your cooling challenges. Download free white paper at [www.atlassales.com/literature/](http://www.atlassales.com/literature/)

Pegasus Buys, Sells and Offers Depot Maintenance & Flat Rate Repair On:

Kronos Time Clocks, Flat Panels, POS & Symbol, HHP, PSC, Telxon, Metrologic, Barcoding Equip

Point of Sale Terminals & Peripherals

- IBM
- NCR
- DigiPro & more

Barcode Devices:

- Symbol/Motorola
- HHP
- LXE
- Telxon
- Datalogic
- Metrologic
- PSC
- Zebra & more

Time Clocks:

We can supply any configuration you need. If you have clocks installed and need a specific KOS version we can help you. Same is true on I/O Boards.

Specialize in 420G, 440B, 460F, 480F, 551, and 4500's

Pegasus Computer Marketing, Inc.

(800) 856-2111

www.pegasuscomputer.net

PCM

Prepare For The Unexpected With Room Alert™

No one knows when or how disaster will strike. We just know the potential is always there. So preparation is crucial to minimizing its impact on computers, networks, users & business.

When disasters occur, there are significant costs in areas that go far beyond the simple replacement of damaged hardware. This is because what happens in the data center or other facility effects the entire organization. If disaster strikes your facility, how will it impact business? Who will get the blame? Could it have been prevented? What will it cost?

AVTECH has a full line of powerful, scalable Room Alert solutions for real-time environment monitoring in a computer room, data center or other facility. All models arrive assembled with easy to install hardware, cables, sensors, easy-to-use logging & alerting software, printed documentation, unlimited technical support and a '30-Day Satisfaction Guarantee'. Users can typically install in under 10 minutes.

Room Alert products monitor critical environment conditions like temperature, power, humidity, flood, smoke, room entry, air flow, motion and more, alert staff by any method and can take automatic corrective action. There is a model that is right for any organization and budget... yours too!

Call or Visit Us Online Today

AVTECH

888.220.6700 • 401.628.1600

AVTECH.com

Protect Your IT Facility... Don't Wait Until It's Too Late!™

AVTECH is the worldwide leader of IT & facilities environment monitoring products. Purchase online at [EnvironmentMonitor.com](http://EnvironmentMonitor.com). Reseller inquiries welcome.

20TH ANNIVERSARY

SELL YOUR EQUIPMENT

FAST

WE NEED YOUR





► UPS SYSTEMS

► RAISED ACCESS FLOORING

► SWITCHGEAR

► GENERATORS

► LIEBERT A/C'S



ONE-CALL RESOURCE RECOVERY

877-630-7520



SPECIALIZING IN RESOURCE RECOVERY AND ASSET MANAGEMENT SINCE 1993

YouTube

LinkedIn

g+

Twitter

Facebook

WWW.CRITICALPOWER.COM

Eliminates hot spots with precision.



Ditto.



Introducing the gForce IR.

The most precise precision cooling in row, ever.

Finally, you can get the cold air directly where it needs to be. No wasted energy. No misdirection. Unlike other in row units, the gForce IR allows you to reposition airflow easily so the air flows directly to the front of the racks. Now, how cool is that?

Cooling Flexibility



Reposition cooling air to the left, right, straight ahead or in opposite directions.



The Reliable Choice in Precision Cooling Equipment

714-921-6000

[DataAire.com/IR](http://DataAire.com/IR)



dtSearch®

Instantly Search Terabytes of Text

• 25+ fielded and full-text search types

• dtSearch's own document filters support "Office," PDF, HTML, XML, ZIP, emails (with nested attachments), and many other file types

• Supports databases as well as static and dynamic websites

• Highlights hits in all of the above

• APIs for .NET, Java, C++, SQL, etc.

• 64-bit and 32-bit; Win and Linux

"lightning fast" Redmond Magazine

"covers all data sources" — eWeek

"results in less than a second" — InfoWorld

hundreds more reviews and developer case studies at [www.dtsearch.com](http://www.dtsearch.com)

dtSearch products:

◆ Desktop with Spider

◆ Network with Spider

◆ Web with Spider

◆ Publish (portable media)

◆ Engine for Win & .NET

◆ Engine for Linux

◆ Document filters also available for separate licensing

Ask about fully-functional evaluations

The Smart Choice for Text Retrieval® since 1991

[www.dtSearch.com](http://www.dtSearch.com) 1-800-IT-FINDS



PDU :: Cables™

connect with us™

HAVE YOU HEARD!



As the data center industry's leading manufacturer of branch circuit power whips, PDU Cables is satisfying the needs of customers everywhere.

Instead of touting our many benefits and industry firsts, here are a few comments we'd like to share.

◆ "When I first started working with PDU Cables you instantly became a 'friend' in the industry. The staff at PDU Cables expedites my orders and gets them to my site VERY efficiently. We have ordered as few as 2 whips and as many as 20+, you guys are always my first 'Go To' for my whips, breakers and power cord needs."

◆ "Keep up the great work; we use you guys for all orders small and large. Just need this economy to kick off again."

◆ "I know all so well PDU Cables capabilities. Hell, I could probably sell your product based upon my experiences with your firm's personnel, its product reliability, and high level of service."

◆ "Thank you to your team for the great work you do!"

Let your next relationship be a partnership; call today for a free quote and find out for yourself why so many people are turning to PDU Cables for their branch circuit power whips.



We Share your Sense of Urgency

We call them quick quotes. If you need a quote right away, PDU Cables has a team of sales support staff available to generate quotes, usually in less than an hour. Even most building plan take-offs can be done the same day we receive them. Once we know what you need quoted, we'll tell you how long the quote will take and then deliver on that commitment.

If there is something you need, something special you require, all you need to do is ask, and we'll do our best to solve your problem or meet your needs. Special requests are what make our job interesting, and our people love their jobs.

Toll-Free 1.866.631.4238 ◆ [www.pducables.com](http://www.pducables.com)

PDU :: Cables™

AIRGUARD®  
the cool choice.™



**BE INFORMED ABOUT ENVIRONMENTAL ISSUES IN YOUR SERVER ROOM...EVEN WHEN YOU'RE SLEEPING**

ONLY SENSAPHONE PRODUCTS CAN CALL AND WAKE YOU WITH A CUSTOM VOICE MESSAGE DESCRIBING THE SPECIFIC PROBLEM WITH SENSOR DETAILS

MAKE SURE YOU **GET THE MESSAGE**

**MONITOR:**

- TEMPERATURE
- HUMIDITY
- WATER DETECTION
- POWER FAILURE & MORE

**NOTIFICATION VIA:**

- CUSTOM VOICE PHONE CALL
- EMAIL
- TEXT
- SNMP

**SENSAPHONE®**

REMOTE MONITORING SOLUTIONS

877-373-2700

www.sensaphone.com

MADE IN THE

USA

**InfraSolution® S**

Smartcard Access Control for Cabinet

Upgrade your cabinet with smartcard access control less than \$ 350 per cabinet



>>> Key Features

- Easy & quick installation
- Designed for IT branded cabinet
- Universal mounting cut out
- MiFARE & Proximity compatible
- Double security by master & user cards
- Unique coded keys available
- Free & user friendly management software
- Fit for left, middle or right door opening
- Audio & visual alarm while unauthorized access
- Door sensors bundled
- Patented smartcard handle design

InfraSolution S series smartcard handle is designed for standalone cabinet.

To look for network and remote control solution, please send your inquiry to : [inquiry@austin-hughes.com](mailto:inquiry@austin-hughes.com)  
[www.austin-hughes.com](http://www.austin-hughes.com)  
1-510-794-2888

**AUSTIN HUGHES**

Austin Hughes Solutions Inc.

8668 Thornton Ave, Newark, CA 94560

**CyberView™**

Rackmount KVM & LCD Console Drawer

1U Widescreen LCD Console Drawer



1080p Full HD

1920 x 1200 WUXGA

- LCD Selections :
  - 17" 1920 x 1200
  - 17" FHD 1080p
  - 19" 1440 x 900
- HDMI / DVI / VGA
- Combo KB / mouse
- Wide range KVM integration
- Short depth design of 18.9" only ( 22.8" with KVM integration )

Options : SDI input

DC power

Rackmount Widescreen Display Panel



1080p Full HD

1920 x 1200 WUXGA

- LCD Selections :
  - 17" 1920 x 1200
  - 17" / 21" FHD 1080p
- PIP / Picture by Picture
- HDMI / DVI / VGA / Speaker

Options : SDI input

Multi-display control

Touchscreen

DC power

Standalone KVM Switch



- Matrix Cat6 & DB15 KVM switch
- Combo Cat6 & DB15 KVM switch
- DVI KVM switch
- USB Hub KVM switch

Options :  Remote access

DC power

**AUSTIN HUGHES**

Austin Hughes Solutions Inc.

8668 Thornton Ave, Newark, CA 94560

[inquiry@austin-hughes.com](mailto:inquiry@austin-hughes.com)

[www.austin-hughes.com](http://www.austin-hughes.com)

1-510-794-2888

**AIRBLOCK™**

DATA CENTER SYSTEMS

**PolySim™**

The clear choice!

- Class 1 Fire Rated
- Made in the USA!



Designed for Your Data Center

PolySim, exclusively from Simplex, offers you so many superior qualities in one transparent curtain material over your typical PVC vinyl, all vital to the success of your hot aisle and cold aisle isolation systems.

- Specially formulated thermal plastic urethane, not a PVC. No out-gassing, no blooming and reduced cleaning requirements.
- Better for the environment, no dangerous plasticizers or phthalates.
- Permanent antistatic properties that will not diminish over time like vinyl.
- Class 1 fire rated with much lower smoke rating.
- Superior abrasion and tear resistance.

Don't trust your data center to any other curtain material.

**SIMPLEX™**

ISOLATION SYSTEMS

Call your dealer today: **1.800.854.7951**

Email: [sales@simplex.net](mailto:sales@simplex.net) • [simplexisolationssystem.com](http://simplexisolationssystem.com)

# Rack Sliding Seat

## "Think on your seat"

- Folds into 1U mounting space
- Quick Install in any 4Post, 19" rack
- Square, round, threaded holes
- Shown with optional pull out KVM



| Part Number | Price    |
|-------------|----------|
| 106-2183    | \$249.99 |



**We design, build & ship**  
**Need an answer now?**  
**1-888-903-RACK**  
**info@racksolutions.com**

RackSolutions, Inc. ©Copyright 2013 All Rights Reserved. All other marks of others are property of their respective owners. Patent(s) and/or Patent(s) pending.



**(888)-865-4639**  
**www.lindy-usa.com**

### USB Port Blocker



System administrators can physically prevent users from connecting Pen Drives, MP3 Players and other USB Mass Storage Devices to their computers to copy data, introduce viruses, etc. The USB Port Blocker is a combined 'key' and 'lock' assembly which plugs into the USB port. Simply plug the 'keylock' into the port and release the latch - the lock remains in place! Plug the key back into the lock to remove. Easy!

- Physically blocks access to a USB port
- Consists of 4 locks and 1 key
- 5 different color code versions available: Pink, Green, Blue, Orange, White



### USB 2.0 Slimline Active Extension Cable

- 5 meter USB 2.0 Active Extension Repeater Cable
- Plug & Play -special software installation not required
- Compatible with both USB 2.0 and USB 1.1 devices
- Connectors: Type A USB Male to Type A USB Female
- For even greater distances simply connect up to 5 cables in series



### FireWire Active Extension Cable

- FireWire Repeater Cable for extending the cable length between FireWire devices over distances greater than the IEEE 1394 specified limit of 4.5m
- Supports IEEE 1394 devices at speeds of up to 400Mbit/sec
- Ideal for use with DV Camcorders, FireWire printers, scanners, digital cameras etc.



### Wireless VGA Compact Projector Server

- Allows connection to a projector or monitor via a wireless LAN
- Wireless link coverage up to 100m
- Ideal for use with PowerPoint and other presentation applications
- Connects to the VGA port on your projector



# Short On Time?

Why navigate through countless Web sites when you can get all the information you need in just a few minutes by reading *Processor*? *Processor's* content is comprehensive, but it's presented in a quick, easy-to-read format, so you can keep up with the constant flood of new data center products and technologies.



# PROCESSOR

For more information, call (800) 334-7458 or go to [www.processor.com](http://www.processor.com)

### What Are Your Priorities?

With IT budgets expected to be essentially flat for the fifth straight year, analysts at research group Gartner say it is time to evolve your IT strategies, priorities, and plans beyond tending to the usual concerns and work to increase technology’s potential in the enterprise. “CIOs require a new agenda that incorporates hunting for new digital innovations and opportunities and harvesting value from products, services, and operations,” says Mark McDonald, group vice president and Gartner fellow.

Here are the top 10 technology priorities for 2013, according to Gartner:

- |  |                      |
|--|----------------------|
| 1. Analytics and business intelligence   | 6. IT management     |
| 2. Mobile technologies                   | 7. CRM               |
| 3. Cloud computing (SaaS, IaaS, PaaS)    | 8. Virtualization    |
| 4. Collaboration technologies (workflow) | 9. Security          |
| 5. Legacy modernization                  | 10. ERP applications |

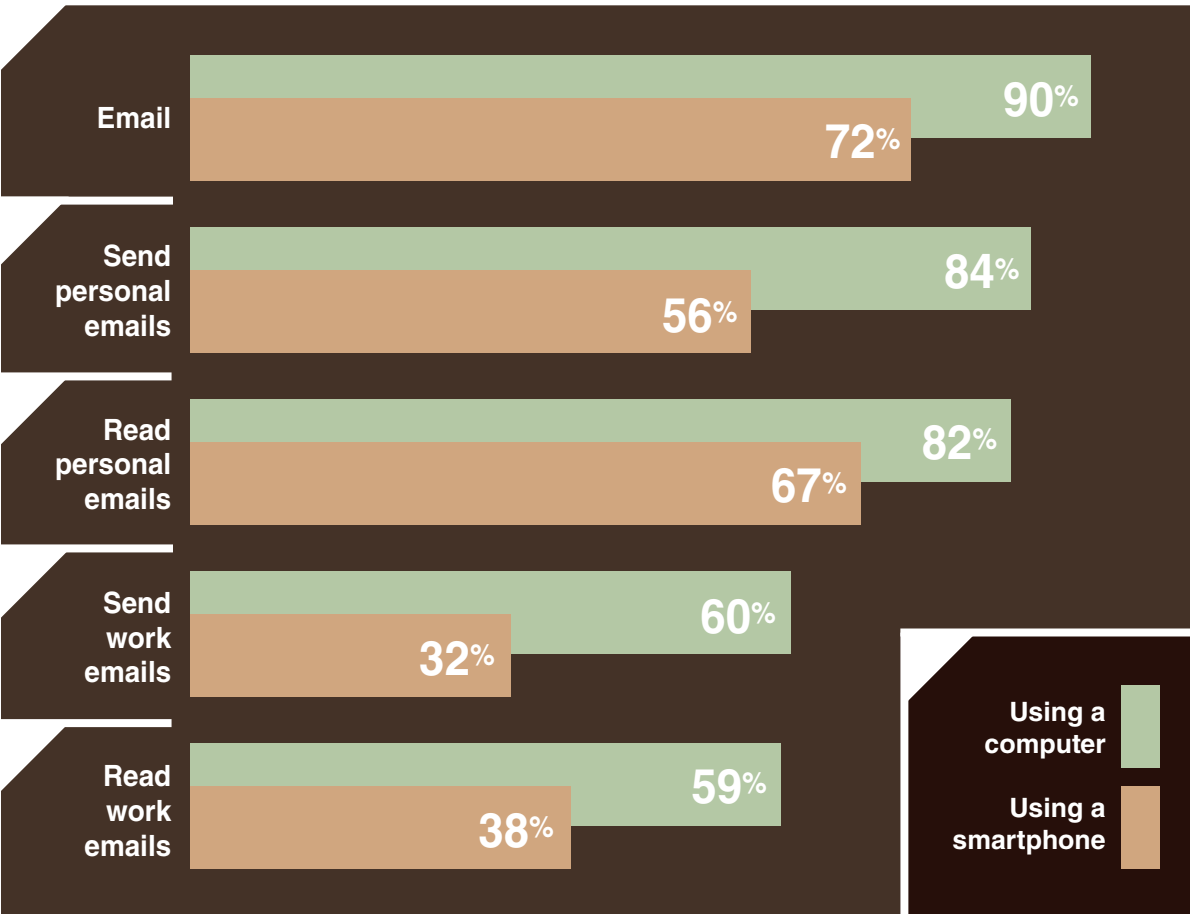
*“In a world of change, it is concerning that around half of CIOs surveyed do not see IT’s enterprise role changing over the next three years. Without change, CIOs and IT consign themselves to tending a garden of legacy assets and responsibilities.”*

-Mark McDonald, group vice president and Gartner fellow

### Smartphone vs. Computer Usage Differences

A survey by Harris Interactive found that respondents are exchanging quick messages (text or IM) far more frequently on smartphones than on computers, and they tend to stick to the computer rather than the smartphone for purchasing non-mobile goods. Otherwise there is a great deal of overlap as people are using both smartphone and computer together as their primary computing devices.

#### Actions Regularly Performed Using A Computer Or Smartphone



### PC Microprocessor Revenues, Shipments Should Be Up This Year

After dropping about 2.4% in 2012, revenue in the worldwide PC microprocessor market should grow 1.6% this year, according to forecasts from IDC. The research firm expects worldwide shipments to be up 3.2%, to 384 million units, this year. Shane Rau, a research vice president at IDC, says that economic uncertainty, delays in PC purchases caused by Windows 8, and the encroachment of media tablets on low-end PCs have cut demand for PC microprocessors. Those economic and technological inhibitors will continue through at least the first half of this year, he says. “For vendors of microprocessors and other PC technologies, the future belongs to those who can best execute on a vision of what computing ultimately should be and how users assess the value to them,” Rau says.

### Social, Information, Mobile & Cloud To Impact Sourcing

What Gartner terms a “Nexus Of Forces,” or the convergence of social, information, mobile, and cloud, is what drives real business value. “The Nexus of Forces converge in several ways: cloud, mobile, and social solutions enable the distribution of information; social media usage and behavior drive mobile and information solutions; and cloud can be a foundation for information, social, and mobile solutions,” says Linda Cohen, Gartner vice president and distinguished analyst. Sourcing managers need to keep these things in mind as they evaluate their options, delivery models, and vendors, Gartner reports. Gartner predicts that some of the biggest changes will occur as cloud adoption forces sourcing managers to reconsider governance techniques and contracting practices and that revised mobile strategies, including BYOD, will expand IT service sourcing requirements as users demand new services.

### Staco Energy Products Announces New President

Jeff Hoffman is the new president of Ohio-based Staco Energy Products. The company, which manufactures UPSes and engineered power quality systems, has been around for more than 75 years. Hoffman is an Ohio native with extensive experience in strategic planning, business and sales development, lean manufacturing, innovation, and acquisition integration. He has held various positions in sales, marketing, and executive management at Fortune 500 companies, including United Technologies, Emerson Electric, Berkshire Hathaway, and his most recent role within Illinois Tool Works (ITW). He has experience in a wide array of industries and with various distribution channels and customers.

### ■ Tablet Computer Ownership Increasing Quickly

Consumers are opting for tablet computers, sometimes at the expense of laptops or desktop PCs, at a quickening pace. The Consumer Electronics Association reports that 38% of U.S. consumers owned tablets in Q4 2012, up from 31% in Q3. IDC reports that worldwide tablet shipments are increasing sharply, as well. The research firm reported about 52.5 million tablets shipped in Q4 2012, which amounts to a 75.3% year-over-year increase as 29.2 million units shipped in Q4 2011.

### ■ Developing Markets To Drive Smartphone Growth

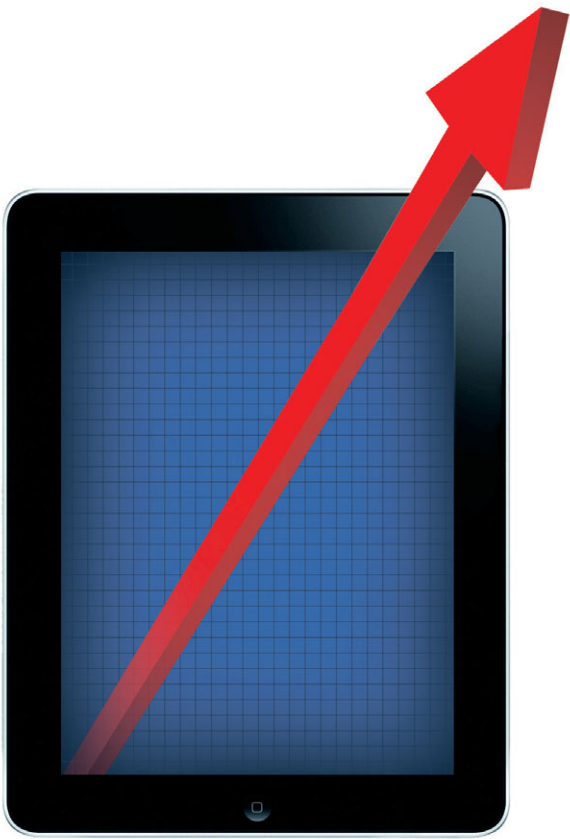
About 38% of smartphone shipments worldwide will go to developing markets this year, according to a new report from Canalys, and those developing markets will account for 70 to 80% of smartphone market growth. China, already the largest market for smartphones, will display an even larger appetite for the devices in 2013; Canalys says about 29% of the 837 million units forecast to ship this year will go to China. Non-Chinese smartphone manufacturers should pay attention to China’s domestic market, says Nicole Peng, research director for Canalys. “Domestic brands are rapidly moving their businesses toward smartphones and winning consumers with their competitively priced devices,” Peng says.

### ■ Semiconductor Market Set To Recover

The worldwide semiconductor market will be up 4.5% this year, according to Worldwide Semiconductor Trade Statistics (WSTS), reaching \$303 billion. Last year, the market reached \$290 billion, down 3.2% from 2011. WSTS notes that, in 2012, the market was down in all geographic regions and all product categories except logic and optoelectronics. Europe was hit the hardest, with about a 10.7% year-over-year decline. The growth should continue into 2014; WSTS predicts a 5.2% increase to \$319 billion for that year.

### ■ Half Of Enterprise Architects Wield Significant Power

In a recently released report based on a July 2012 survey of EA (enterprise architecture) practitioners in North America and Europe, Gartner claims that 50% of people in this position “have a significant impact on enterprise IT budget activities and decisions.” Gartner analysts estimate that this impact amounts to “final decision-making” for \$331 billion in enterprise IT spending worldwide and “a great deal of influence” over \$774 billion. One upshot of the findings, according to Philip Allega, managing vice president for Gartner, is that “[t]echnology and service



providers should develop targeted marketing to this new generation of EA practitioner as they have significant influence on their organization buying decisions.” Failure to do this, says Allega, will result in missed selling opportunities.

### ■ 4G LTE Subscriptions To Increase 115% In 2013

According to research firm IHS, the growth in 4G LTE (Long Term Evolution) cellular subscriptions will increase dramatically this year. Not only will the number of subscribers pass the 100 million mark for the first time, the total will sail past that benchmark; there were 92.3 million LTE subscribers in 2012, and IHS projects that there will be 198.1 million subscribers by the end of 2013. Now that LTE is becoming a global standard rather than fighting for dominance among competing 4G technologies, the industry can focus on growth. “Rapid adoption will drive design innovations, particularly in smartphones,” says Wayne Lam, senior analyst for wireless communications with IHS, “but issues like spectrum fragmentation will also remain an overhang for the LTE industry that requires attention.”

### ■ Cloud Costs, Challenges Greater Than Anticipated

About half of organizations are already working in the cloud, according to a recent survey from KPMG International. The downside? About a third of survey respondents say the costs of moving to the cloud were higher than expected and about as many reported significant implementation challenges. Cloud adoption should improve, rather than weaken, security concerns, the report notes. But more than 25% of survey respondents report extensive security-related challenges, showing that business and IT executives need to work together to create a cloud security strategy. Survey respondents

also report that they are working proactively to address future legal and regulatory requirements and are discovering that cloud environments can have a significant impact on a company’s tax position and bottom line.

### ■ More Software Vulnerabilities Reported In 2012

The number of software vulnerabilities that are disclosed jumped 26% last year after five years of declines. The data, released in a new report from security research and advisory firm NSS Labs, comes in spite of continued investments in secure software made across the software industry. Vulnerabilities in information control and SCADA systems, which control processes such as electrical grids and water supplies, almost doubled between 2011 and 2012 and are up 600% since 2010, NSS Labs reports. While the number of vendors affected continues to expand—73% of vulnerabilities disclosed last year were from new vendors that did not have a disclosure the previous two years—1% of vendors accounted for 31% of all the vulnerabilities last year.

### ■ Cloud To Heavily Influence Security Over The Next Two Years

It’s clear that organizations and governments are adopting cloud computing services in growing numbers, often in order to counterbalance reductions in IT expenditures and workforce while maintaining operational consistency. According to new research from Gartner, cloud-based security services are becoming more popular, as well. Gartner predicts that 10% of enterprise security solution capabilities will be cloud-based by 2015. Noting public cloud infrastructure protection mandates will be in place in the United States by 2016, Lawrence Pingree, research director for Gartner, says, “Security technology providers will need to prepare their technologies in order to address potential mandates for critical infrastructure protection of public cloud environments.” Gartner indicates messaging, encryption, authentication, remote vulnerability assessment, and data loss prevention are among the security capabilities that will increasingly be available in the cloud.



SIX QUICK TIPS

# Boost Enterprise Backups

Techniques, Policies & Approaches To Simplify The Process

**IF THERE IS A NECESSARY EVIL** that exists within enterprise data centers, it's the data backup process. IT and data center managers may not enthusiastically embrace having to perpetually deal with the ins and outs of backing up the company's data, but failing to do so can ultimately prove to be a far greater pain in their necks. The good news is that there are numerous steps that managers can implement to make backup duties less painful. These include relatively quick and simple approaches that can prove extremely effective.

✓ *Develop A Backup Plan*

Making the backup process as efficient as possible can go a long way toward easing managers' burdens. Having a plan that's executed and tested is key, says Greg

Schulz, senior advisor at the Server and Storage IO Group. The process entails checking that backups, copies, or replications are working by performing random audits and reviews. Also, he says, "virtualization and cloud are important tools to help with enabling a resilient, flexible, and scalable data infrastructure; however, clouds and virtualization also need to be protected." Overall, Schulz advises rethinking how your company is doing data protection and to "look beyond the media or medium. Look at how the tools are used or can be used in new and innovative ways."

Rocky Shek, senior storage engineer at Area Data Systems (714/993-0300; [www.areasys.com](http://www.areasys.com)), says companies often neglect putting a concise, written, step-by-step

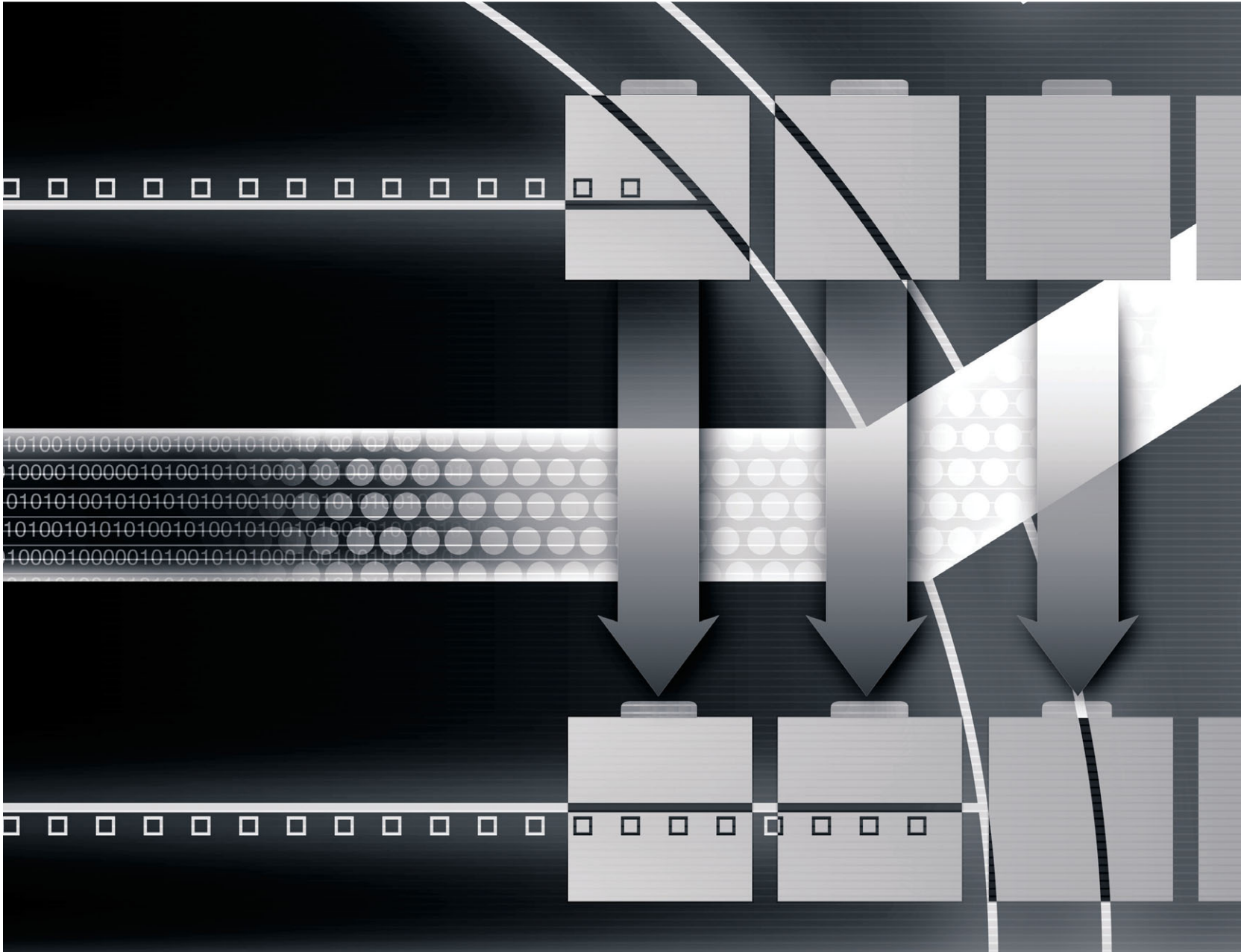
disaster recovery plan in place. Such plans should outline specific procedures, which will increase efficiency and protect the DR process if the unforeseeable should occur. "I could design the most robust, redundant, and effective DR solution, but that will not protect you from the most common point of failure—the human aspect," he says.

Planning for expanding performance and capacity requirements is also important. Florin Dejeu, director of product management at Sepaton (866/737-2866; [www.sepaton.com](http://www.sepaton.com)), says companies can address this by evaluating data protection solutions able to handle backup volumes that will grow and that can handle data volumes in the tens of petabytes or more in one system. Such solutions, Dejeu says, "can concurrently back

up, recover, deduplicate, and replicate data quickly and efficiently by load balancing the operations across multiple processing nodes if necessary." Further, these solutions enable protecting all the company's data in one "capacity-optimized system for maximum operational efficiency" while ensuring the company can meet recovery time objectives, Dejeu says.

✓ *Test, Test, Test*

Practicing backups is the simplest step managers can take to enhance backups, Shek says. "A lot of cases, there is a plan in place but has anyone actually performed the fire drill?" Dejeu says to test early and often. "A backup and recovery program must include a complete test of systems,





procedures, and processes in as realistic a manner as possible to ensure RTO/RPO can be met with a minimum of surprises in the event of a failure,” Dejeu says.

Tests should include large data volumes to obtain an accurate assessment of how the protection system will realistically handle high-capacity and high-performance requirements. “Backup volumes will definitely grow, so any size company should invest in a system that lets them easily add capacity without sacrificing performance all in one box,” Dejeu says. “To ensure this, companies should compare vendors in a way that puts pressure on them to push performance to the full requirements of the enterprise and then some to ensure it will meet the inevitable growth needs.”

✓ *Rethink Your Approach*

To know where you’re headed, you sometimes must revisit where you’ve been. To that end, Schulz advises revisiting why you’re protecting data and applications against various threat risks and assess if you’re treating all data equally or aligning resources (people, hardware, software, time, and budgets) to different threat scenarios. Be sure to revisit how often you’re protecting or backing up data, if you’re doing full or incremental backups, and how long you’re retaining data.

Schulz says it’s also important to check if you’re expiring or setting retention on media to keep costs down and reducing the data-footprint impact at the source by archiving email, databases, file systems, and home

directories. “You might be surprised how simply using what you already have in new ways can stretch things to go further and buy some time while getting ready to take the next, more strategic steps,” he says. “Don’t forget about removing complexity; whenever you take out complexity, you can take out cost. Rethink how you’re protecting data, which means more than just swapping out tape for disk for cloud or deduping.”

✓ *Go Beyond Proof Of Concept*

For companies considering a new data-protection platform, the selection process can be complex and risk-prone, Dejeu says. Many IT pros, he says, rely solely on proof of concept (POC) or side-by-side comparisons of systems in their data centers, but

“POCs should be just one part of an overall evaluation process,” he says. “A test environment must emulate as closely as possible the production environment.”

Enterprises commonly test small data volumes or limited data types that don’t reflect the real challenges of their data-protection environments, Dejeu says. “A well-designed POC process ensures the optimal data protection solution is deployed, eliminates the need for costly unplanned upgrades, and optimizes investments by helping to quantitatively determine the best vendor solution for the customer’s specific environment.” For data-intensive enterprises, this requires testing performance and capacity based on realistic volumes and using real data that hasn’t been scrubbed or modified.

✓ *Factor In Bandwidth*

Rocky Shek, senior storage engineer at Area Data Systems (714/993-0300; [www.areasys.com](http://www.areasys.com)), says replication will provide greater security to the backup process and can be achieved in a more global aspect by implementing multiple disaster recovery site redundancies. “One glaring, yet costly, roadblock to success is the bandwidth allocated to your backup,” he says. “Backup windows are constantly shrinking and speed is necessary, yet the cost for bandwidth is always a determining factor to efficiency.”

Florin Dejeu, director of product management at Sepaton (866/737-2866; [www.sepaton.com](http://www.sepaton.com)), suggests considering a backup solution that cuts bandwidth requirements of a replicated backup. He says such solutions use deduplication technology to replicate only new data and pointers to existing data in full backups.

✓ *Look To The Future*

Florin Dejeu, director of product management at Sepaton (866/737-2866; [www.sepaton.com](http://www.sepaton.com)), says that, when selecting a backup solution, be sure to choose a data-protection system that lets IT analyze capacity growth and performance efficiency over time to give an accurate prediction of future requirements.

Dejeu also suggests controlling capital expense with a “pay-as-you-grow, modularly scalable system” that lets you add disk shelves for more capacity or processing nodes for more performance only when needed. Additionally, Dejeu says to aim to reduce OPEX and IT administration labor costs by combining “single-system consolidation, advanced automation, and detailed management reporting tools with data-protection policy to enhance operational productivity and eliminate human error.”

BONUS TIPS:

✓ *Simplify Where Possible*

For many small to midsize enterprises, adopting a backup philosophy that stresses simplicity makes the most sense. Simplicity can include enlisting such approaches as using cloud-based backup and recovery services to offload tasks IT has traditionally done. Simplicity can also involve using products that automate processes where possible but enable IT to still control the automation policies.

✓ *Consider Moving To Disk*

Companies able to make a modest investment toward boosting their backup process might think about skipping tape and backing up to disk, says Rocky Shek, senior storage engineer at Area Data Systems (714/993-0300; [www.areasys.com](http://www.areasys.com)). “There are significant price and speed benefits to going with a highly redundant disk backup solution,” he says.

SIX QUICK TIPS

# Understand Cooling & Airflow Issues

Identify Trouble Spots To Enhance Efficiency & Cut Expenses

**COOLING IS UNDOUBTEDLY** one of the most important aspects in running a cost- and energy-efficient data center. But experts agree most companies could be doing a better job in any number of facets relating to cooling, including airflow. The following advice can help you better understand, visualize, and identify cooling and airflow issues in your data center and take steps to remedy them.

✓ *Know Your Environment*

For enterprises committed to making cooling and airflow conditions a priority, begin by having a comprehensive understanding of the data center environment. “You can’t properly manage what you haven’t measured,” says Jenna Maertz, research analyst at Info-Tech Research Group.

Maertz says that separating out the data center power bill can provide a company with a baseline it can use to compare improvements against later. “This can help make the case when justifying future efficiency initiatives,” she says. “If you compare the amount of power that is consumed monthly to the data center’s total power capacity, you will have a proper baseline to determine how efficient your data center is, and from there you can begin to search out options for improvement.” Not doing this, she says, lessens the perceived impact of any future improvements you make.

✓ *Measure & Monitor*

Consistency is a key in terms of effective cooling and airflow monitoring and

maintenance. Whether using sophisticated monitoring software and temperature probes or basic adhesive temperature strips, monitoring should include consistent, scheduled documentation of temperatures to identify negative fluctuations and various patterns.

It’s also important to monitor temperatures inside cabinets and visually inspect cabinets inside and out, monitor internal equipment temperatures, and measure hot spots in equipment racks to make certain temperatures at the top of the rack aren’t exceeding the equipment’s optimal operating temperatures. If you’ve recently added new equipment, ensure cooling requirements haven’t also changed.

From a cost and resource perspective, Maertz says it’s important to invest in the

right tools. “Spend your money investing in cost-effective monitoring equipment that gives you a picture of your rack’s power and temperature—front and back, top and bottom.”

Laura Viars, senior sourcing specialist at Rackmount Solutions (800/352-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says a remote monitoring system can help you can keep your eyes on the temperatures at all times. “If you are on a tighter budget, certain filler panels can be fitted with a temperature strip, allowing you to visually assess the internal cabinet temperatures.”

✓ *Cooling & Airflow Are Related*

“Cooling and airflow issues often go hand-in-hand, as poor airflow management





is a leading cause of inefficient cooling,” Viars says. “Oftentimes, data center managers mistake poor airflow for insufficient cooling capacity.”

Viars says airflow issues most often occur under the raised floor, along the aisles, or within the cabinets themselves. At the raised floor level, the most common airflow issue tends to be airflow impedance, she says. This can be caused by problems such as poorly planned placement of CRAC units, excess or unruly cable bundles, misplaced perforated tiles, or the presence of pipes and other unmovable structures.

Along the aisles, Viars says, one of the biggest causes of inefficient cooling is bypass air, or when the cold air supply is not being used to cool the equipment as intended.

Instead, it mingles with the ambient room air and enters the cabinet at a much warmer temperature than what is ideal.

From within the cabinet, recirculation is a significant cause of cooling issues, she says. Recirculation is caused when the air doesn’t reach the equipment inside the cabinet as it should. Instead of the equipment pulling in cool air, it pulls in the warmer air circulating within the cabinet, raising the operating temperature of the equipment in a vicious cycle, she says.

✓ *Implement Free Or Cost-Effective Solutions*

When it comes to improving cooling and airflow, there are several low- or no-cost steps you can take. If the issue stems from

insufficient cooling making its way up from under your raised flooring, Viars says to make sure cables are neatly secured in trays or bundles. “Taking the time to create neat and organized cable runs underneath your raised flooring can help the air better reach its intended destination,” she says.

Viars says you also need to make sure the location of your CRAC units makes sense in relation to where the air needs to go and that perforated tiles are located so that the equipment above can benefit. Cover up any gaps where the cabling runs from under the floor into the base of the cabinet, she says.

Check to see if there are spaces between your cabinets or where the cabinets meet the floor, causing bypass air, Viars says.

“If so, consider blocking off those spaces with an expanding foam seal and under-rack panels. Products such as these will ensure proper airflow within the aisle.”

Inside your cabinets, be sure you are using filler/blanking panels to cover up any unused spaces within the cabinet, which will decrease the chances of recirculation. “Tower-style servers should be placed on their sides on a shelf or bracket kit, to avoid large, open gaps,” Viars says. If you have cable access points on top of the cabinet, reduce the instance of bypass air by using brush-style grommets within those holes. “Ensure that the cable management within your cabinet is neat and tidy, so that is causes minimal airflow obstruction,” she says. [P](#)

✓ *Share The Responsibility*

Most companies could benefit from establishing that both the facilities and data center groups share responsibility for cooling and airflow issues. Jenna Maertz, research analyst at Info-Tech Research Group, says the reality is “73% of organizations don’t split energy bills between overall facilities and the data center and therefore have no real visibility into their data center cooling costs. This makes cooling and airflow a problem for both IT and facilities.” This type of arrangement also decreases a company’s incentive to make improvements because the data center lacks direct accountability, she says.

✓ *Tap In To “Free” Cooling*

“Free cooling,” or air-side and water-side economizers used to complement mechanical cooling, has gained increased attention. Jenna Maertz, research analyst at Info-Tech Research Group, says these approaches can definitely save money, but compared to other cost-saving measures, they can lead to less of an increase in efficiency and involve costs associated with switching over to a free-cooling solution.

“Organizations that adopt free cooling technologies report that they saw a 10% improvement in their data center efficiency,” she says. “In comparison, organizations also report that using precision cooling solutions improves efficiency by 25%, using a hot and cold aisle design has a 41% improvement, and replacing HVAC with other more precise solutions leads to a 45% improvement in efficiency. Many of these solutions do require heavy investment, though,” she says.

“Info-Tech has found that cooling renovations in the data center cost a median of \$50,000 to \$100,000 (or roughly \$87 per square foot), so this isn’t a project to be conducted on a whim,” Maertz says. She advises doing a cost-benefit analysis.

BONUS TIPS:

✓ *Beware Of Overcooling*

With all the concern about making sure you’re providing enough cooling to data center equipment, one common mistake is overcooling. Many companies target data center temperatures at about 70 degrees Fahrenheit despite modern equipment being able to run at temperatures as much as 10 degrees higher, according to industry estimates. Experts advise simply increasing the temperature so that it hovers around human comfort levels.

✓ *Check Out Other Options*

Depending on your situation, other viable cooling options worth considering include using rent-to-own programs to acquire supplemental air conditioning while spreading payments out over time. Additionally, some distributors offer special leasing arrangements for temporary or seasonal cooling needs. Portable commercial AC units that IT can easily move from one location to another can also make economic sense for some companies when compared to adding a rooftop AC system.

# Choose The Best Servers For Virtualization & Consolidation

Compare Capacity, Memory, Network Connectivity & More

**BY VIRTUALIZING APPLICATIONS** and efficiently using available server resources, you can cut down on the physical equipment you need, saving space and money. But you can't implement virtualization and benefit from consolidation if you don't have the right servers for the job. We'll show you some of the most important features to look for and help you get the best performance for your money.

✓ *Choose Memory & Networking*

As x86 servers, which are good fits for virtualization, start to approach the commodity level, it makes sense to focus on more than just the processor. John Sloan, lead analyst at Info-Tech Research Group, says the processor type is "not going to be a differentiator from one brand of server to

the next." Instead, he says, consider where the potential bottlenecks would be if you implemented virtualization and use those predictions to pinpoint important features.

Memory can limit the number of virtual machines (VMs) a server can support even more than a processor. "When you start to crowd in a lot of VMs, especially with the latest generation, you're not liable to hit the ceiling in terms of concurrent VMs running on a single processor," Sloan says. "But where you might hit a bottleneck or a ceiling will be in memory and how many VMs can concurrently run and share that memory."

Sloan says it's also important to consider the server's networking capabilities, particularly for data centers that separate their servers from their storage arrays and connect them via

a network such as a SAN. A lot of companies still have 1GbE switches that "can top out the amount of capacity to those arrays," Sloan says. If you don't have at least 10GbE or your network connectors and bandwidth aren't up to par, he says, it will affect your ability to run most consolidated infrastructures.

Some vendors are "almost reinventing the server," Sloan says. Instead of only putting memory, a processor, and some networking capabilities in the servers and then connecting them to separate storage, vendors are building high-capacity, fast storage solutions into their servers, which can, in some cases, cut SAN out of the picture. "If you consider that processors are getting to the point where they can run a lot of different workloads and a storage

controller, you can essentially have everything together in one box," Sloan says.

✓ *Make Sure The Servers Fit Your Requirements*

A lot of what you look for in a server will depend on the type of virtualization software you want to use. Make sure your vendor's servers support your chosen software. From there, a vendor should be able to show you the key features you'll need to get the most out of virtualization and help you consolidate through improved performance and efficiency.

"Since the purpose of virtualization is to get more productivity out of a single server while reducing administrative overhead, companies generally want to find a high-performance, multiprocessor system with





large amounts of memory, hard disk space, and network bandwidth to meet their requirements,” according to Supermicro (408/503-8000; [www.supermicro.com](http://www.supermicro.com)). Depending on your applications, you should also consider the redundancy options, including level of RAID for storage protection, redundant power supplies, and multiple network interfaces for load balancing and redundancy.

✓ *Match Servers, Applications*

You need to find a server that can fully support your applications. “If the company is going to run mission-critical applications, then the server will need to be configured with as many redundant components and features as possible for maximum availability,” according to Supermicro. “If the availability of the VMs

is provided via software management across multiple physical servers, then the reliability requirements for individual servers are different.” This is especially important because the reliability of servers, down to the guaranteed 9’s of availability, will affect the price.

Sloan says to be careful about vendors that focus too heavily on consolidation ratio, which is the maximum number of VMs a server can handle. This can be particularly misleading because some applications require fewer VM instances than others, which could lead to paying for features you don’t need.

Know what resources each virtualized application will require. “The latest generation processors and the capacity you can get with two processors may be more than enough for your consolidation needs and may be

more than enough to run even high-end VM requirements,” he says. “It’s about cost per capacity, as well as raw capacity.”

✓ *Refresh, Rather Than Retrofit*

You can retrofit servers for virtualization, Supermicro says, but it depends on their age. If you have one- or two-year-old servers, you can upgrade internal components such as processors, memory, hard drives, and PCI-E flash memory cards or even replace server nodes with more advanced ones to build a better multinode system, according to Supermicro.

But just because you can retrofit existing servers doesn’t mean you should. Sloan says companies used to see virtualization as “investment protection and a way to extend a server’s useful life.” However, if the servers

are too old, it could erase the potential gains. “Virtualization tends to go to the lowest common denominator,” Sloan says. “If you have a bunch of machines, it will virtualize to the lowest processor.” This could mean that you are getting the same low utilization rates and not taking full advantage of available capacity.

Today’s x86 servers “are commodity and have a set lifecycle, so usually it’s more about planning for your refresh than finding ways to upgrade,” Sloan says. He uses desktop PCs as an example of where servers are today. “In the early days, you could add a new hard drive or upgrade your memory. But what happened is you eventually realized that you could spend all of your time and effort doing that, or you could just wait another year and get a new PC that had twice the capacity.”

✓ *Look For Integrated Virtualization Management*

Virtualization is great technology to take advantage of, but only if you have a way to monitor and manage the underlying software. “If, for example, you have a blade system, you want to look at how the virtual infrastructure is managed,” says John Sloan, lead analyst at Info-Tech Research Group. “You also want to look at how that management of the virtual layer integrates with management tools for the overall infrastructure. In a virtualized and consolidated world, hardware is capacity and you just want to make sure you get the best capacity and best utilization for the dollar.”

✓ *Reduce Your Physical, Power Footprints*

One of the biggest benefits of consolidation is the ability to lower the physical footprint of your data center by minimizing the number of servers you need. But there are some other ancillary benefits of consolidation that you may not think about initially, such as lowering your power consumption.

“When we’re evaluating blade systems, we do look at power efficiency ratings and things like that,” says John Sloan, lead analyst at Info-Tech Research Group. “The original blades were reducing the physical footprint, but they tended to suck a lot of power and generate a lot of heat, so maybe you could avoid having to expand your data center or get a new data center and there were savings there, but you were still paying a lot for facilities. You can now look at power consumption and energy efficiency ratings, because some of the newer-generation gear is cutting down that consumption curve.”

BONUS TIPS:

✓ *Look For Certifications*

When looking for servers for virtualization and consolidation, Supermicro (408/503-8000; [www.supermicro.com](http://www.supermicro.com)) recommends choosing a multiprocessor system that has been certified compatible with the intended virtualization software. You also need to select certified components that support virtualization with drivers readily available. If a server or component is certified for virtualization, then you know you’ll get the best possible performance for your specific environment.

✓ *Maximize Efficiency For Better ROI*

The point of virtualization and consolidation is to make your data center more efficient and help you save money. The best way to do that, according to Supermicro, is to maximize the capacity of the processing cores, memory, storage, and networking bandwidth and optimize the resource allocation for better total cost of ownership.

# Use Green Alternatives To Meet Power Demand

Environmentally Friendly Energy Sources Can Lead To Better Energy Efficiency

**MANY COMPANIES WANT** to make their data centers greener and take strides to improve energy consumption and efficiency. But some companies want to take it one step further and power their data centers using clean, green energy sources. Although this isn't necessarily an option for every company, there are some ways to meet your power demands using green alternatives. We'll show you a few examples of green energy sources, explain their potential uses and benefits, and help you determine whether they're a fit for your company.

### Research All Available Energy Sources

The number of alternative energy solutions available may seem overwhelming at first. The best course of action is to determine

what types of power you are interested in and then research them as much as possible to make sure they are truly applicable for your enterprise's needs.

Most companies are familiar with solar, wind, and hydro power, which are commonly used in some industries today. Jenna Maertz, research analyst at Info-Tech Research Group, says that solar and wind power are most beneficial to companies that want to complement existing power sources, while hydropower is only an option for those located near dams but can be a "good alternative to coal."

In addition to solar, wind, and hydro power, there are other options, some of which require major changes but can come with great results. One such alternative is geothermal power. "Data centers can be designed so that

the piping systems take advantage of cool underground temperatures in order to provide heat exchange," Maertz says. "This is a good energy source but would require a new build or significant renovation to existing facilities."

One other alternative is biogas, which is created when organic matter breaks down and can be used as a natural fuel source. "It comes from sources such as waste, wastewater treatment plants, farms, landfills," Maertz says. "Biogas projects are still mostly in the beta stages, and the energy source hasn't been fully tested, but in the future, this could become a viable source of clean energy."

### Decide Which Sources Are A Fit

Although it's a great idea to look at alternative power sources for your data

### Key Points

- Research all available alternative energy sources, including solar, hydro, wind, geothermal, and biogas.
- Based on your data center design, location, or future data center building plans, determine which power sources are a fit and will result in short- and long-term benefits.
- Consider investing in new equipment and technologies at the platform and component levels. These investments can not only lead to a more green and efficient data center but also help you save money in the long run.



center, they may not all be financially or geographically feasible, and some of them may not provide as much of a benefit as you might think.

For instance, Simon Mingay, research vice president at Gartner, points out that solar photovoltaic approaches require “huge areas for solar farms, which make them impractical for most, other than for peak-shaving purposes.” He also says that cogeneration or trigeneration using natural gas turbines is sometimes the only option for data centers to make a larger dent in their power consumption. However, it’s “difficult to retrofit in many circumstances, but easier for a new build,” Mingay says.

That doesn’t mean that you don’t have options for improving your energy

efficiency. For instance, you can implement free air cooling or water cooling techniques using natural sources, which can help cut down on the energy needed for running your cooling systems.

If you do want to take the natural gas route with cogeneration or trigeneration, there are ways to raise money for projects and also make them much more manageable. “Funding for onsite generation is easier where power purchase agreements are available in which the capital costs and maintenance are taken on by a third party in return for an agreement to buy the power at an agreed rate/kW hour,” Mingay says. It’s important to base your green power approach on your specific needs and location.

**Make The Little Things Add Up**

When you’re investigating ways to boost power efficiency and improve your company’s green efforts in general, it’s often more manageable to start small and then build up to whatever level your company is comfortable with. There are green strategies to implement at almost every level of the data center.

For example, if your company isn’t able to fully embrace some of the larger-scale green initiatives, there are many smaller changes you can make that will add up in the long run. “There is so much low-hanging fruit that most organizations still have a long way to go before hitting the commercial limitations,” Mingay says. This means that there are a lot of simple strategies

available that many companies aren’t using. The key is to find which strategies are applicable to your business and take advantage of as many of them as you can.

No matter what you do, it’s important to measure your energy consumption so you have a clear idea of where you are now and where you’re headed. “Start measuring energy consumption and gradually increase the granularity of what you measure,” Mingay says. “Start with the data center or server room, [and] separate out the IT and networking equipment from the cooling and power infrastructure. Then, move on to the rack level, eventually down to the server, and even the virtual machines. PUE (power usage effectiveness) as a metric is a good place to start, despite its frequent misuse.”

### Top Tips

Jenna Maertz, research analyst at Info-Tech Research Group, offers the following tips for improving the energy efficiency of your data center:

- ✓ The recent recession has led to tighter IT budgets and stalled or ended many green IT initiatives. A long-term approach to green IT will lead to cost savings, while those organizations that act reactively see only inconsistent results. If you face organizational resistance to green projects, try recasting them as cost reduction tactics to gain more executive buy-in.
- ✓ Before looking for complicated green IT projects, focus on the simple ways you can decrease your existing power usage. Consolidate servers, power off unused system, and focus on building automation where possible.
- ✓ Take advantage of your geographic location. Look for opportunities to implement free cooling if temperatures throughout the year are low enough. Annual temperatures only need to be below 72 degrees Fahrenheit for you to leverage seasonal or overnight free cooling. Embrace hydropower if you are near a dam, and wind power if there is a local wind farm.

### Action Plan

Jenna Maertz, research analyst at Info-Tech Research Group, recommends following these steps when investigating green power alternatives:

- **Define clear environmental goals.** To start with, this can just be the intent to investigate current energy usage, and then using those measurements to set defined and realistic targets.
- **Start measuring energy costs to bolster your business case.** Be sure to emphasize the value to the business to encourage executive buy-in.
- **Encourage a green culture in your organization.** Create an environmental committee with both senior and junior employees. The initiatives should not just be top-down.
- **Look for incentives and rebate programs to fund your initiatives.** State and federal governments are increasingly offering incentives for decreased energy usage, and many organizations fail to take advantage of them. Talk to your local utility company for more information.
- **Incorporate sustainability into your ongoing processes.** Evaluate and report progress to ensure initiatives stay on track and staff remains engaged. As a bonus, green practices also create goodwill with suppliers and consumers.



### Get Started

Where you start really depends on whether your company already has a few green strategies in place. If not, it’s a good idea to come up with a few goals that will mentally prepare employees for thinking green. After that, you have to look at your company’s infrastructure and see where you can make changes. For some companies, it’s possible to go green simply by using existing infrastructure more efficiently, but for others, it may be necessary to invest in all new technology, which could potentially be expensive the short term but would pay off in lower energy costs in the long term.

# Test Your Security Defenses

Help Ward Off Attacks By Discovering & Patching Holes In Your Network & Applications

**NO NETWORK, APPLICATION, OR SERVER** can be protected from every possible attack, particularly if you simply assume that your security solutions are safe from the newest threats. The only way to fully protect yourself from hackers and to make sure your resources are safe is to regularly test your defenses with the help of vulnerability scanning solutions or full penetration testing from outside agencies. Regular security testing will help make your data center stronger and more secure.

✓ *Think Like A Hacker*

To prevent attacks from hackers, you need to understand how they think. “Attackers are not stupid,” says Jim O’Gorman, malicious entity simulator at Offensive Security. “There is no reason to go after a hardened

target. If you want into an organization, the best route to take is to conduct your information gathering and identify what they are running, how they work, and where they are defended. Then just wait. In time, an opening will present itself. This might be in the form of a new vulnerability, something happening in the news you can take advantage of, or something as simple as a new attack presenting itself. That’s when you strike.”

Because hackers are always searching for the path of least resistance to infiltrate companies, keep your guard up at all times and let your security systems evolve alongside the growing threats. This is also why regular penetration testing is absolutely essential. You need to fully test the security measures you have in place, otherwise you can’t be

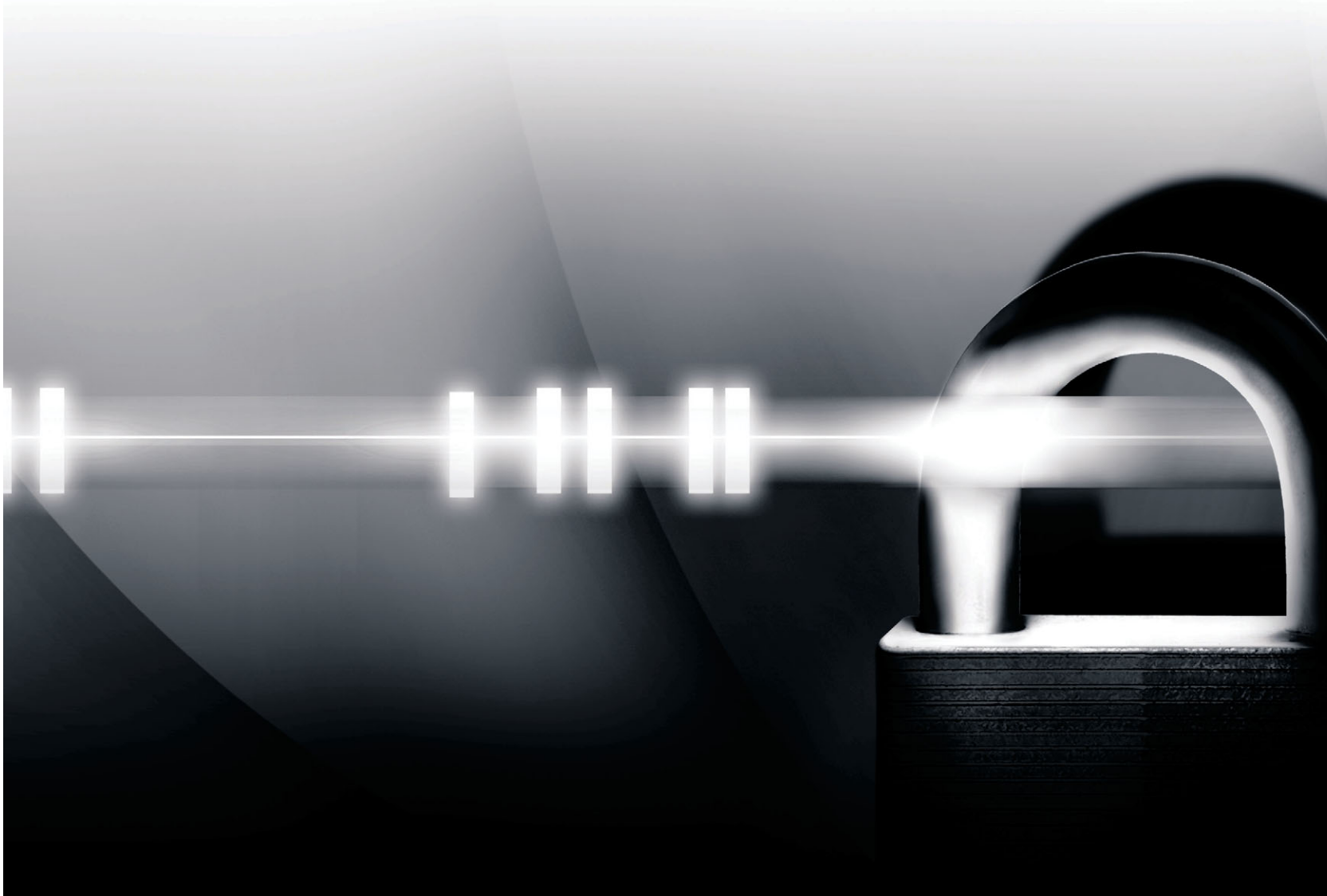
sure they’ll live up to their potential when an attack actually occurs.

✓ *Determine If You Need Outside Help*

There are many options available for testing your defenses both internally and with the help of third-party experts. According to O’Gorman, organizations need to start taking advantage of free vulnerability scanning solutions or purchase licenses to other scanning tools so they can run Metasploit scans, which are designed to find vulnerable spots in your network. But many companies don’t even run these basic tests. O’Gorman recommends running these “rudimentary checks” on your own before calling an assessment team for additional testing.

James McCloskey, senior research analyst at Info-Tech Research Group, agrees that free vulnerability scanning tools are helpful, but he also recommends considering the Open Web Application Security Project (OWASP) when testing applications. OWASP gives companies “a lot of testing tools that are open source,” he says.

There will come a time when you’ll need the help of outside experts, who will not only give you fresh sets of eyes but also give you the benefit of in-depth, real-world penetration testing. It’s up to you to find a vendor that has the right experience. “Very few organizations have a set of dedicated ‘attackers’ that focus on offensive security techniques,” O’Gorman says. “When you bring in outsiders to conduct the assessment, they should



be well experienced from multiple assessments they have conducted and leverage that unique experience to increase the quality to a level that cannot be done in house.”

✓ *Decide Whether To Test Regularly Or Continuously*

McCloskey says that certain applications or systems may require periodic testing, possibly on a quarterly basis, if they aren’t necessarily mission-critical. Companies in certain industries, such as the payment card industry, are required to do quarterly external vulnerability and penetration testing that covers both applications and the network, he says. McCloskey also points out that companies should run tests “any time the application is substantially changed” in addition to regular testing to

make sure that recent updates haven’t opened up new security holes.

If your organization has a lot of systems to monitor and maintain, it may be worthwhile to continuously test your security using a vulnerability scanner to ensure your network administrators aren’t overburdened. You could take advantage of a network port scanner that searches through attached devices and helps “detect vulnerabilities that are actually exploitable,” McCloskey says. This system can also help you discover false positives, which will prevent you from wasting time on similar issues in the future.

McCloskey advocates frequent testing. “In my previous life, we would run it on a weekly basis,” he says. “Out of those weekly results, we would then farm those out to the various

system administrators and responsible parties and say, ‘These are the things that you need to fix.’ While there was a steep curve at the beginning to get that all set up and have people take action on it, the end result was that if something changes six weeks from now, a notification is provided to that system administrator in a matter of days, you close the vulnerability much faster, and the system administrators are getting these as periodic little blips as opposed to a big chunk of work.”

✓ *Build Security Around Your Business Processes*

“Complexity is the enemy of security,” O’Gorman says, so companies should keep things simple when it comes to their applications and infrastructure. Be sure to build

systems with testing in mind to make the process that much simpler. “It should be easy to know when something breaks and why it broke,” O’Gorman says. “Not only does this make correcting issues easier, but testing becomes far easier, as well.”

For companies where building simpler systems isn’t necessarily an option, McCloskey says it’s important that administrators embed security into everything they do so that future tests will yield fewer vulnerabilities. “It’s a very strong security organization that has a small core of security experts who run the tools and do project assessments, and then are supplemented by the eyes, ears, arms, and legs of all of the system administrators and application developers out in the field that are providing supporting security services,” he says. <sup>P</sup>

✓ *Implement A Web Application Firewall*

Sometimes even the best preemptive testing won’t prepare apps for the rigors of life outside the organization, and you may need to patch unexpected security holes. But during that process or in a case where there’s no quick fix, you may want to protect the app from further attack by installing a Web application firewall.

“The results of these tests may indicate things that can be fixed very quickly, and then you can get the software patched so it’s no longer vulnerable,” says James McCloskey, senior research analyst at Info-Tech Research Group. “Alternatively, if that’s a big can of worms that would be opened to revisit it, then the organization can focus on alternative protection approaches like a Web application firewall and tune it specifically to mitigate it against the risks that the application is vulnerable to. Interposing a Web application firewall buys you some time to fix your applications properly, if at all.”

✓ *Look Within For Security Threats*

It’s important to remember that some security threats come from employees inside the company. “Employees are often one of the largest security risks to the organization,” says Jim O’Gorman, malicious entity simulator at Offensive Security. “Part of the reason for this is that workflows are often designed with what would be easiest for IT to deploy and maintain, not what works for employees. It’s worth the time to understand what an employee’s job is and then find ways to make it easier for them to do the right thing. Water is going to run downhill and employees are going to do whatever makes their job the easiest, so make the easiest solution the secure one.”

BONUS TIPS:

✓ *Know Your Applications*

“It’s important to know not just how complex systems work when everything is going right, but also to understand how they fail when something goes wrong,” says Jim O’Gorman, malicious entity simulator at Offensive Security. “Understanding failure points is critical for improvement and is why stress testing is part of every manufacturing process around.”

✓ *See Better ROI Through Security Testing*

“There is a limited amount of money that can be put into defense on an annual basis,” O’Gorman says. “But with a properly conducted assessment, you can identify the most likely areas of the infrastructure to be attacked. This allows you to put defensive money into the high-impact areas, allowing you to get the highest possible return.”

# Improve Your Cabling Infrastructure

Stay Current With The Latest Technologies & Trends Designed To Provide More Flexibility, Scalability

**IF YOU WANT TO** simplify the process of making changes and additions in your data center, you need to have a flexible and scalable cabling infrastructure in place. But in order to do so, you should stay on top of the latest cabling trends and technologies.

“To improve overall uptime and make my staff more self-reliant, I insisted on a cable-management plan that makes deployment fast, easy, and scalable,” says Ken Koty, sales engineer at PDU Cables (866/631-4238; [www.pducables.com](http://www.pducables.com)). Having a cable strategy that is well-planned, organized, and executed, he says, is crucial during periods of installation and maintenance.

Cable management extends beyond uptime, Koty says. A neat, orderly data center reflects on everyone associated with the site “from technicians all the way up to the CIO.” Cable management, he says, is “probably most important when current and potential customers come

to visit.” Here are tips to improve your cabling infrastructure.

**✓ Know The Trends**

Jeff Clark, president of Lindy USA (888/865-4639; [www.lindy-usa.com](http://www.lindy-usa.com)), says that with the growth in blade servers and similar technologies, there is a requirement for less cable density on the backside of your equipment, which has led to an uptick in the use of fiber-optic solutions. “We are starting to see more installers that are increasingly comfortable with the deployment of fiber-optic technologies,” he says.

Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says there is no clear-cut recommendation for using copper over fiber (or vice versa). “Each one has its purpose, and the average data center will use a blend of the two,” she says. As storage and bandwidth needs increase, however, managers might look to

fiber cabling as a viable option for preparing areas of the network for future growth and technologies, she says.

Tom Hodson, director of sales at Total Cable Solutions (888/235-2097; [www.totalcablesolutions.com](http://www.totalcablesolutions.com)), says the more notable trends occurring in data center cabling can be described in one word: density. “The smaller the diameter of the cable and the more compact a patch panel can be, the better,” he says. “Airflow management, maximizing rack space, and doing more in a smaller footprint are strong trends today.”

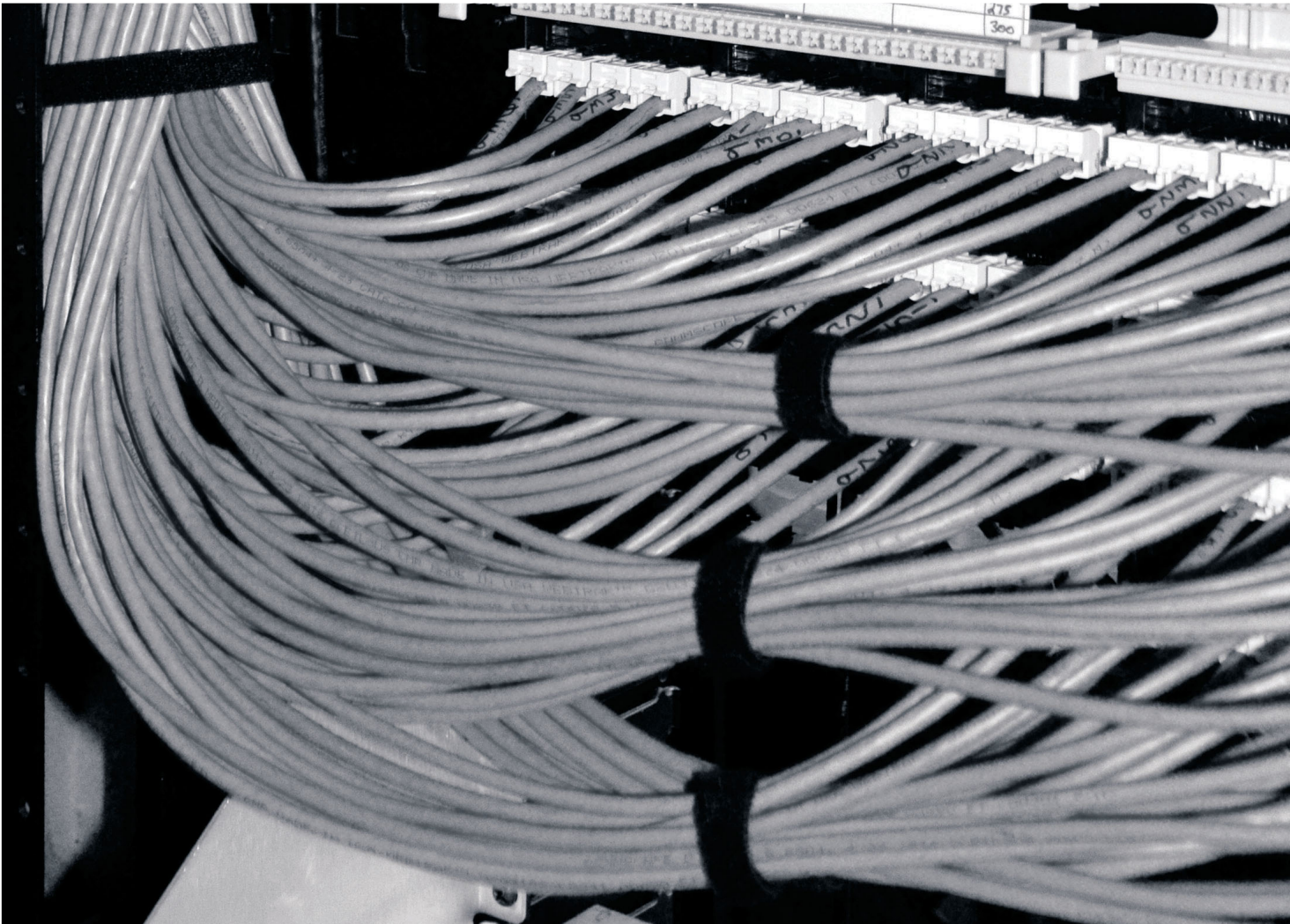
One approach toward this is using UL-Listed multi-circuit branch circuit power whips that minimize conduit runs above and under floors. Koty says “matching branch circuit power whip faceplate and box colors with conduit color is making power cable management an easier task.” Other trends, he notes, include using elevated mounting positions and

integrated mounting hardware for branch circuit power whip receptacles, which protects against possible underfloor water and enables better airflow and improved CRAC unit efficiency. “Adding supplemental labels onto branch circuit power whip receptacle boxes, along with elevated mounting positions, makes identifying and isolating power feeds much faster and simpler,” he says.

**✓ Get Onboard With The Contractor**

Koty says if your enterprise decides to use a cabling contractor, first make certain that you agree with the guidelines the contractor plans to implement and also have everything documented. “When your team installs add-on business, they need to follow the guidelines established by the contractor,” he says.

Along with that, Lindy’s Clark says, the data center manager needs to have a good





relationship with a vendor that he trusts. “These guys know their markets, and if they are the type of vendor that wants a relationship with you for years to come, they will help you choose the practical path for your future. By getting help in avoiding missteps along the way, you will save money,” Clark says. “When choosing who you do business with, it is important to look for more than a low price.”

✔ *Plan For The Future*

When eying data center cabling solutions that will ensure future flexibility and scalability, Koty says to remember that space is the most valuable commodity. A solution that’s designed to save space should contribute to the future needs of today’s data center. Koty recommends installing infrastructure that can handle a higher capacity than currently needed. “Then when steps are taken to increase densities, your systems

should be able to handle the load without being reconfigured, allowing for quicker and easier installation.”

Clark agrees. “Always user a bigger conduit than you need, always have extra room in a tray, always be able to get physical access to everything, and think about how hard it will be to run a new cable later,” he says. “It never fails, you will be running a new wire at some time. Also, leave some extra space in your rack. It never fails that you will need to stick one more piece of equipment in there that you had not planned to originally.”

Overall, keys to a successful cabling strategy include using separate racks and pathways for each cable type and keeping copper, fiber, and power cables separate, particularly if using cable trays, Koty says. “A well-organized cable-management system also improves security by limiting human error when working with cables and improved airflow and cooling allowing for


higher densities,” he says. In addition to creating separate pathways for cable types when designing cable layouts, allow room for cable management, access, and bend radius requirements.

Total Cable Solutions’ Hodson advises anticipating N+2 technologies when investing in backbone cabling. Using OM4 for fiber runs, for example, can address today’s 10GbE requirements and tomorrow’s 40GbE and 100GbE speeds, he says. “It’s important to choose cabling solutions that are feature-rich and future-proof, yet not proprietary as to limit your sourcing options,” he says. “Looking for cabling solutions that are interchangeable and fully backward-compatible will make it easier and cost-effective to mix and match with your existing infrastructure investment.”

✔ *Simplify Additions & Changes*

To ease the process of adding or changing cabling systems down the road,

Koty suggests having well-documented guidelines in place for labeling that are consistent for all cabling systems. “Make sure that new installations follow these guidelines so anyone familiar with the scheme can find what they are looking for,” he says.

If cabling under the floor, he says, use cable seal grommets that provide flexibility when lifting panels and adding or changing out cables. Additionally, Koty says ensuring that cables will fit a given application and aren’t excessively long will help facilitate airflow. When eying cable solutions that will make adding future components quicker and easier, he says, “using a color-code system to establish different cable types and cable redundancies managed through separate cable pathways or trays makes isolating cables for addition, replacement, or troubleshooting a simpler task.” 

✔ *Know Your Data Center*

Ken Koty, sales engineer at PDU Cables (866/631-4238; [www.pducables.com](http://www.pducables.com)), says it’s important to recognize that no two data centers are exactly alike. Before committing to a cabling solution, “understand the limitations that exist in the available space, either above the racks or below the floor,” he says. “Often, your data center space will dictate which cabling solution is appropriate for you, regardless of the latest techniques.”

✔ *Communicate With Your Vendor*

The data center manager and the hardware vendor need to communicate, says Jeff Clark, president of Lindy USA (888/865-4639; [www.lindy-usa.com](http://www.lindy-usa.com)). “The data center manager needs to be able to clearly lay out what his short- and long-term goals are. The vendors (who know their products best) can aid in planning for the present as well as the future. They know what new things are going on in their industry.”

BONUS TIPS:

✔ *Pay As You Go*

Tom Hodson, director of sales at Total Cable Solutions (888/235-2097; [www.totalcablesolutions.com](http://www.totalcablesolutions.com)), says that by using a cabling system that allows for a “pay-as-you-grow” approach, data centers can minimize upfront investments but still provide scalability in coming years. “Use of modular patch panel designs and flexible patching options make growth easier and less disruptive,” he says.

✔ *Be Willing To Bend*

Among the technology-related trends occurring in cabling, high-bend radius fiber cabling is one to keep an eye on. Hodson says the cabling type is quickly becoming a data center standard. “In the ever-changing world of faster protocols, having more ‘headroom’ and less performance impact from cable bends is driving this standard.”

# Improve Your Data Center Environmental Monitoring

Choose The Right System, Then Get The Most Out Of It

**ENVIRONMENTAL MONITORING** is essential to data centers. Monitoring important factors such as the temperature and humidity helps you avoid costly downtime and equipment damage, and being able to have a complete picture of your data center environment helps ensure you're providing sufficient cooling, addressing potential hot spots, improving the overall efficiency of your data center, and reacting quickly when something isn't right. These tips and advice will help you take advantage of the many benefits environmental monitoring can provide.

✓ *Know Your Goals*

If you're looking to buy an environmental monitoring system for the first time or you want to upgrade to a different solution,

you should first know what exactly you want it to do.

"You need to identify your goals and your vulnerabilities," says Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; [www.sensaphone.com](http://www.sensaphone.com)). "Is your goal to just make sure everything is running and just receive notifications when things fail, or are you looking to analyze the efficiency of the environment and make improvements? In other words, are you looking for alarm notification, or are you looking for data logging and trending?"

Also look at the type of conditions you want to monitor. For instance, you can track temperature, power consumption, or even airflow in addition to other elements. Know what conditions your data center

is prone to and invest in sensors that will either track those conditions for efficiency purposes, notify you if they reach a certain threshold, or both.

"Know thy facility," says Michael Sigourney, president and CEO of AVTECH Software (888/220-6700; [www.avtech.com](http://www.avtech.com)). "The first thing an IT or facilities manager needs to consider and create is an understanding of the basic layout and elements, both structure and equipment, within their facility," he says. "Knowing where threats are likely to occur or have occurred in the past is key to planning success. Environmental monitoring is not a 'one size fits all' scenario, as each facility is unique."

Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; [\[.temperaturealert.com\]\(http://temperaturealert.com\), says, "Any solution you choose at a minimum should provide unalterable logging, data visualization for trend spotting, and of course alarm notification to multiple people when there is trouble."

Be sure to look at your company as a whole, Douglass says, to determine the overall need for environmental monitoring. "In many situations, there are similar monitoring needs at the same facility, on the same campus, or somewhere else within the same company," he says.

✓ \*Don't Forget Humidity & Water\*

You can sometimes get so focused on temperature that you neglect other conditions that can cause major issues. One such condition is high or low humidity.](http://www</a></p></div><div data-bbox=)





When combined with unstable temperature conditions, humidity can wreak havoc on your equipment. Some issues related to temperature and humidity can build slowly over time, so an environmental monitoring system that tracks both conditions will help you make necessary adjustments.

Water and leak detection can also be easy to neglect. Chris Pullen, president of RLE Technologies (800/518-1519; [www.rletech.com](http://www.rletech.com)), says that, while power failure is the No. 1 cause of downtime, water is the second and can often be the overall cause of a power failure. He says you need to install leak detection throughout your facility. “Don’t forget to look above the ceiling. What’s on the floors above your data center? Look outside the box.”

✓ *Check Your Alarms & Alerts*

Many environmental monitoring solutions feature notifications and alerts, typically either as audio or visual alarms or email- or SMS-based alerts. Although these alerts are helpful for monitoring your environment, they won’t do much unless the right person responds.

“The real challenge will be in setting the alarm thresholds—too wide a range and you won’t be alerted in time; too narrow a range and you’ll receive so many false alarms that future alarms will be ignored,” Schechter says. “It’s important to baseline any new system. In other words, watch those readings for a few hours so you can see the natural indoor

weather pattern of the room and set the alarm parameters accordingly.”


✓ *Invest In Management*

Once you’ve put an environmental monitoring system in place, it can be easy to get overwhelmed by all the data available.

Jon Fogelson, key accounts sales manager at RLE Technologies, says you need to purchase a monitoring system that can communicate with all your sensors and equipment. Then you can easily access an overview of equipment and sensors from one location, no matter where you are.

Even with a good management system, you can struggle with the issue of convergence, says Cam Rogers, vice president of domestic and international sales at RLE Technologies.

For example, he says, you may have a management system that requires a certain protocol but equipment that outputs another type of signal. “Even when they are able to convert available protocols to what they require for integration, then the issue becomes identifying what information is of value as some equipment provides more information than what could ever be needed or of use, leaving the data center manager overwhelmed with unnecessary information,” he says.

Ted Fletcher, RLE Technologies technical support manager, agrees, adding you need a simple view to monitor data. “Some systems spend more resources/time on graphics vs. monitoring the points. The faster the system can react, the faster a correction can be deployed.” 

✓ *Consider Redundancy*

“There are many possible causes of an environmental problem in a data center, like equipment failure, a nearby lightning strike, or even a car hitting a telephone pole,” says Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; [www.sensaphone.com](http://www.sensaphone.com)).

“Anything can happen, and in many cases, more than one system may fail during the crisis. Always consider as much redundancy as possible. Avoid relying solely on your network to deliver alarm messages, as the network itself may be down. Consider products with more than one communication path or some method of out-of-band communications, such as phones lines or cellular.”

✓ *Avoid Excessive Dependencies*

Along with choosing a system with some form of redundancy built-in, you should try to avoid system dependencies with your environmental monitoring solutions. Bob Douglass, vice president of sales and marketing at Sensaphone (877/373-2700; [www.sensaphone.com](http://www.sensaphone.com)), says that some systems require a server or PC to operate, “which can leave your system worthless if that server or PC has a problem.”

In the same way that your monitoring system should have multiple communications paths, it should also have a backup plan in case of power failures or other electrical issues. “Look for systems that use their own wireless technology that will keep operating during a power failure and independently of the Wi-Fi network,” Douglass says. “Relying on AC power is also a dependency, so built-in battery backup is never a bad thing with monitoring products.”

BONUS TIPS:

✓ *Regularly Test Sensors*

Just like you regularly check that your backups are running properly, your software patches are applied, and or your antivirus is up to date, run a quick test on your environmental monitoring systems to make sure alerts are getting through to the right people, says Harry Schechter, founder and CEO of Temperature@lert (866/524-3540; [www.temperaturealert.com](http://www.temperaturealert.com)).

✓ *Look For These Overall Features*

- Ted Fletcher, technical support manager at RLE Technologies (800/518-1519; [www.rletech.com](http://www.rletech.com)), offers this list of features to look for in an environmental monitoring product:
1. Easy access to view data.
  2. Easy to set up and maintain.
  3. No hidden fees.
  4. Ability to connect to multiple pieces and brands of equipment (vendor-neutral).
  5. Ability to work with open protocols (SNMP, Modbus, BACnet).
  6. Reliable platform (solid-state hardware vs. servers using OS and mechanical components).
  7. Email notification and ability to integrate to other BMS, BAS, and NMS systems for redundant paths if necessary.

SIX QUICK TIPS

# Understand Your Enterprise’s Biggest Security Threats

Get Up To Date On Malicious Attacks & Learn How To Stop Them

**EVEN THOUGH SECURITY SOLUTIONS** are becoming more advanced, hackers and other external forces are working just as hard to overcome these barriers to access sensitive company information. With attackers unleashing new viruses and developing more sophisticated approaches to network infiltration, companies may feel like they’re fighting a losing battle. But as long as you keep up with the current security trends and know what types of attacks are a threat to your business, you’ll give yourself a much needed advantage. We’ll show you some of the new ways outsiders are getting past data center defenses and how you can fix vulnerabilities in your network to prevent those attacks.

✓ *The Rise Of Targeted Attacks*

In the new age of security and threat detection, traditional hacking methods are often no longer effective. For this reason,

attackers are focusing less on the company as a whole and instead focusing on one or two administrators that could give them access to the entire network.

“Let’s say I’m going after the ACME Company,” says John Pescatore, vice president and distinguished analyst at Gartner. “I’m going to do some research on LinkedIn or Facebook and find people that say they work at ACME and are Linux administrators or mobile application developers. Then, I’ll use very targeted attacks against those people with administrative privileges to go after applications running in the data center or data being stored in the data center.”

After these outsiders find the right target, they can use a variety of weaknesses to infiltrate the company. For instance, Pescatore says that reusable passwords are often a major vulnerability, because attackers can trick an administrator into thinking that he’s on a legitimate site and enter his password.

From there, the hacker can use that password to log on to company systems while appearing as the administrator. To help combat this, Pescatore recommends companies institute a more advanced authentication system with non-reusable passwords.

In addition to non-reusable passwords, companies should consider monitoring user activity. Pescatore says that an “administrative account really should not be looking at one record at a time” and that a “customer service rep should not be downloading an entire database.” These are telltale signs that the account is hacked and is being used to access internal resources. To help with administrative account issues, Pescatore recommends database administrative monitoring tools, and, for simpler OS accounts, he recommends super user privilege management tools, which are both designed to give companies a better view of user activity.

✓ *Antivirus & Security Suites Aren’t Enough*

Having a solid antivirus solution in place is great because it often has a large database of potential threats that can be discovered and removed, if not completely blocked in the first place. But the problem with current intrusion prevention systems and Web security gateways, Pescatore says, is that they “do not do a good job of detecting these targeted threats because they’re relying on signature-based techniques.” Most companies will need a more advanced security solution in place to protect sensitive data from outside forces.

Jessica Ireland, research analyst at Info-Tech Research Group, agrees that implementing antivirus software and anti-malware suites is simply “a step in an overall security strategy,” but it can’t be the only line of defense. Instead, you need



to develop a multi-pronged approach to security that covers all bases and also makes sure your company is meeting the compliance requirements of your industry.

“Depending on your organization and your compliance requirements, you may need more tools than most—like if you’re a hospital,” Ireland says. “Most organizations need to have the basics in place, such as antivirus, intrusion detection and prevention, DLP, Web content filtering, and endpoint encryption, but should look into log management or a SIEM [security information and event management] system for advanced monitoring of all of their systems.”

✔ *Prevent Attacks Using Network Monitoring Tools*

Because traditional security measures may not be able to spot attackers that have hijacked administrative accounts to gain

access to internal resources, Ireland says that you should find ways to improve the visibility of your users and your network through the use of monitoring solutions.

“It seems self-explanatory, but proactive monitoring of your users and their activities is key to noticing anything amiss, and not enough people are putting in the time,” Ireland says. She recommends that companies either opt for simpler log management solutions that show basic user information or jump up to more advanced SIEM systems, which allow for a wider view and deeper dive into user activity.

Ireland says SIEM systems are often expensive, so they may not be a fit for all organizations. But SIEM solutions or other monitoring alternatives can be essential, especially for companies with certain compliance requirements. Ireland says that everything leads back to network monitoring, which can give you an advantage over


potential attackers by spotting problems as soon as they happen rather than trying to clean up the mess afterward. “It comes back to visibility, policies to ensure proper security practices are happening, and tools to support those policies.”

✔ *Educate Employees & Be Open To Information Sharing*

The only way to make sure your employees aren’t making themselves vulnerable to attack is to educate them on what they should look out for and what they need to avoid. Pescatore says that even something as simple as explaining to administrators how your help desk works can prevent potential intrusions.

“Often, IT administrators don’t use the help desk all that much, so they’re not familiar with how the help desk really would contact you,” Pescatore says. “We see admin people falling for these phishing attacks, which are very targeted and look

like they’re coming from the help desk, but they’re something the internal help desk would never do, like ask you for your password or ask you to change something.”

Pescatore says that social networking sites also are becoming an issue. He says that employees need to limit the amount of work-based information they provide on services such as LinkedIn or Facebook to make sure they don’t become targets to outside attackers. This should be a part of your overall education plan, which, fortunately, can be buoyed by information-sharing events. For instance, the FBI has a program called Infragard “where security administrators from companies get together once a month to share threat information,” Pescatore says. It’s a great way to find out what’s happening to other companies and use those situations as cautionary tales to prevent employees from making similar mistakes and opening up your company to attacks. 

✔ *Consider Whitelisting To Prevent Targeted Attacks*

With so many attackers trying to get their software onto the computers of IT administrative personnel, companies may be willing to try almost anything to prevent something catastrophic from happening. However, John Pescatore, vice president and distinguished analyst at Gartner, says that some solutions to these problems have been around for years, but “data center administrators resisted them.” One such security measure is called whitelisting. “On a typical server, rather than allow the server admin to install whatever software he wants, the admin can install any software that’s on the whitelist,” Pescatore says. “If you take that approach, then the targeted attacks cannot install their payload.”

✔ *Prepare For Cloud & Virtualization Vulnerabilities*

John Pescatore, vice president and distinguished analyst at Gartner, says that because cloud computing and virtualization approaches are becoming so popular in data centers, attackers are bound to find new ways to infiltrate companies using new techniques. “People who use hybrid clouds or cloudbursting are opening new connections from their data centers to the outside, and it’s inevitable that threats will start to bang on those,” he says. “When you do move to a virtualized data center, make sure you’re looking at your security processes, in particular incident response and access management or user account management. Make sure you change your processes to deal with the changes virtualization or any use of the cloud brings.”

BONUS TIPS:

✔ *Don't Assume Your Security Is Airtight*

“Know your security and compliance requirements, what tools you have, and what you need, instead of assuming you’re covered,” says Jessica Ireland, research analyst for Info-Tech Research Group. Your company’s security isn’t simply “set it and forget it.” Security solutions need regular updates to be truly beneficial, and you need to know that your company is secure rather than hope it is.

✔ *Use Tools & Policies Together*

“Tools can’t work alone, and neither does policy,” Ireland says. “You need both to back each other up, cover your organization if something does go wrong, and strengthen your overall security strategy.”

BUYING TIPS:

Security



WITH SO MANY SECURITY solutions on the market, it can be difficult to choose the right ones. Here is some advice on what every enterprise needs.

✓ Start With Network Access Control

A network access control solution will limit unnecessary access to your company’s internal resources. If you can prevent outsiders from connecting to your network, then there is a much smaller chance of a security breach. Network access control systems can also be used to monitor the mobile device connections of employees working outside the company. Smartphones and tablets are becoming popular targets for hackers, so checking to make sure the external connection is safe and secure will go a long way toward preventing a potential intrusion.

✓ Move Up To Unified Threat Management

A UTM solution goes a bit beyond network access control by essentially creating a gateway through which all users and data has to pass before it lands on your company’s internal infrastructure. UTM combines intrusion prevention, antivirus, antispam, and many other features into one solution designed to protect your company.

✓ Don’t Forget Email Security

Receiving malware-filled messages can result in the infection of one computer or the infrastructure of the entire company. And sending messages with sensitive information no matter what the reason is always a dangerous proposition. As one of the most basic measures, every company should have some form of encryption attached to its email systems. Encryption helps ensure that even if an email is intercepted, it is less likely that a hacker will be able to mine anything from it.

Along with encryption, you’ll want to invest in an antivirus program to protect servers and endpoints against malicious code and viruses. Make sure the program you purchase automatically downloads and deploys signature files all the way to the endpoints.

✓ Add In Data Loss Protection

An enterprise DLP (data loss prevention) solution can “offer a lot of capability in terms of preventing the egress of data,” says James Quin, lead analyst at Info-Tech Research Group. Such solutions can be expensive, so finding existing tools with DLP capabilities (up-to-date network perimeter UTMs and comprehensive endpoint anti-malware packages) can “deliver

at least a moderate level of protection without the excessive cost,” he says.

✓ Check For Updates & Upgrades

Making certain basic security tools are in place is half the battle. The other half is ensuring antivirus systems, hardware, and anything else tied to security are continually patched and updated.

Dan Olds, founder of Gabriel Consulting Group, says IT should take a “maniacal” approach toward patching software and firmware. “Unpatched and unmaintained systems are the biggest cause of security vulnerabilities,” he says. “The biggest trouble areas are

systems on the network that haven’t been maintained and patched to the appropriate levels. There are a wide range of devices that tend to fly under the radar, including servers, desktops/laptops, and networking components. If something is on the network and can see the outside world, it can end up being a vulnerable point that can be exploited.”

One possibility, Olds says, is using a network discovery tool that tracks down everything on the network and creates an inventory of items that need to be checked and that need the latest patches. “This is a good project for a new hire or intern—provided they’re supervised,” he says.

BUYERS’ CHECKLIST

- ✓ Does the solution allow you to limit access to the network and block unwanted connections?
- ✓ Can the solution provide a perimeter defense that prevents threats from landing on your servers and other internal equipment?
- ✓ Emails make it easy to infect computers with viruses and send out sensitive data to hackers, so you should invest in a strong email encryption solution.
- ✓ Will the vendor help you set up an update and upgrade plan that will let you keep your security solutions up to date without breaking your budget?

KEY TERMS

Mail transfer agent (MTA).

A solution that catches and checks incoming email for threats before transferring it to your internal email platform.

Network access control.

A solution that helps you limit access to your network and lower the chance of an infiltration.

Unified threat management (UTM).

Software (often installed on a managed appliance) that seeks to comprehensively block malware and network threats through features such as a firewall, antivirus, antispam, intrusion prevention, VPN, access policy enforcement, and more.

BUYING TIPS:

Storage



YOU SPEND A LOT OF MONEY on storage, and you need to make sure every dollar you spend is a good investment. With so many options available, including cloud, in-house, or some combination of both, it’s more important than ever to have a solid understanding of what’s available and what’s most important for your enterprise.

✔ *Do Your Homework & Know Your Goals*

When narrowing your storage options, careful research is invaluable. “Do your homework, but don’t over-analyze,” says George Crump, senior analyst at Storage Switzerland. Crump suggests discussing your project with one systems vendor, one new-but-established vendor focused on the mid-range, and one startup.

Crump says you should have a clear goal. “Do [you] need more capacity, more performance, better data protection, [or] some or all of the above?,” he asks. Be clear about your company’s business requirements, business strategy, and networking strategy, including bandwidth requirements and available facilities and services.

Greg Schulz, senior advisor at Server and StorageIO Group, recommends stepping back from comparing tools and technologies initially and instead reviewing service-level objectives and requirements, including RTO and RPO. Also be sure to give serious thought to how much of the new storage could be in the cloud, whether public (third-party) or private (in-house).

✔ *Inventory Your Data*

Have a clear understanding of your data and requirements. Inventory the type of data you have today—how much is in databases, email, files, and other formats. Crump says a good set of storage analysis tools can help you evaluate how you’re currently using your IT resources.

✔ *Spend What’s Needed*

Storage can be expensive, but you often get what you pay for. “While everyone wants to spend pennies to save dollars, real data protection may cost dimes, not pennies—but you’ll still be saving dollars,” says Jason Buffington, senior analyst with Enterprise Strategy Group. Often, management may underestimate the financial impact downtime or lost data has until it’s too late, he says. “In today’s market, that may mean losing a key client or potentially being unable keep the doors open just because you can’t get your data back,” he says.

✔ *Consider Outsourcing Storage Management*

Mike Karp, vice president and principal analyst at Ptak, Noel, and Associates, says for small to mid-sized enterprises, most often the best option is outsourcing storage management, particularly where getting the most out of your storage and doing it with the greatest efficiency is concerned.

“Third-party providers often have a huge competitive advantage when it comes to providing storage services, and if an IT manager can make a good business case for outsourcing many of the storage responsibilities . . . they can spend more time doing the things that they do best and offload the things that they can’t do with greater efficiency to somebody who can do them in a cost-effective manner.”

BUYERS’ CHECKLIST

Here are some things to keep in mind as you formulate your storage strategy:

- ✔ **Data safety.** Keeping your precious data safe is vital to profitability, so be sure to implement redundancy and strong error correction, as applicable.
- ✔ **Uptime.** You need reliable devices and software, along with failover protection (both emergency power and redundant data storage systems). You’ll also need support from the vendors, relevant manufacturers, and/or developers.
- ✔ **Security.** Consider all elements, including user access policy, encryption, firewalling, and malware prevention.
- ✔ **Speed.** How fast your storage works is important. SSDs will have a role in most data centers.
- ✔ **Manageability.** Your organization may require new software for storage management, data protection, support, and future storage planning.
- ✔ **Cost-effectiveness.** Think not only in terms of cost per gigabyte, but also cost per I/Ops. Deduplication, virtualization, and provisioning features can help you avoid wasting money and power on unnecessary drives.
- ✔ **Scalability.** Whichever path you take, make sure the result will let your data center grow with your organization’s needs.

KEY TERMS

**Cloud storage.**

Storage that takes advantage of offsite, third-party providers that maintain and manage the physical storage devices.

**Solid-state drive (SSD).**

Data storage with no moving parts; it uses solid-state memory, or microchips, to store data, making data retrieval faster.

# BUYING TIPS: KVMs



**THERE’S LITTLE DOUBT** that KVMs offer plenty of options. Brett Femrite, Rackmount Solutions director of business development (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says models include simple desktop options that control a handful of computers up to enterprise-level, IP-based KVMs with integrated matrix switching that let multiple users simultaneously access different devices.

✓ *Pick A Knowledgeable Vendor*

Most people purchasing KVMs are familiar with KVM switching technology, but they are not so well-versed in the available offerings, says Jeff Clark, president of Lindy USA (888/865-4639; [www.lindy-usa.com](http://www.lindy-usa.com)).

If you don’t have time learn about all of the offerings, carefully consider the aptitude of the vendor partner you are working with, Clark says, and be transparent about your needs and future growth plans. “A good KVM vendor can help place the right system in your hands, but in order to do that, you must take the time to include this vendor in the initial planning stages,” Clark says.

✓ *Consider Security*

Buying a KVM with secure IP remote user access is essential to reducing manpower and negating the need for onsite operation by enabling administrators to gain BIOS-level access to servers, says Anthony Yim, general manager of Austin Hughes Solutions Inc. (510/794-2888; [www.austin-hughes.com](http://www.austin-hughes.com)).

Femrite says you need to consider automatic time out, which disconnects users after a specified period of inactivity. A priority feature for data centers with multiple users accessing the enterprise’s devices is permissions-based access rights, which grants specific users access to only the devices and administration levels they need.

✓ *Factor In Compatibility*

Be sure to account for compatibility, Femrite says. Determine the number of devices you want to connect, hardware devices you’ll connect to it (mouse, keyboard, monitor), and the connection types (USB, PS/2) you need. Compatibility with the monitor you’ll connect the KVM to (DVI or VGA) is also essential.

✓ *Check For Devices & Users*

KVMs have a limited number of servers and devices they can directly control. Will Beene, rack specialist and technical account manager at Rack Solutions (888/903-7225; [www.racksolutions.com](http://www.racksolutions.com)), says you need to know how many users can be supported both locally and remotely. KVMs are offered in a variety of port densities, so you should be able to find one that perfectly fits your needs.

Yim says you can reduce KVM hardware expenditure and simplify management with a KVM that offers simultaneous multiuser access from different locations on devices connected to the same KVM switch.

✓ *Determine The Distance*

Determine the maximum distance you need to connect devices to the KVM. “If further than approximately 25 feet, you should opt for a CAT5 cable vs. the standard KVM cable kit,” Femrite says. If the servers are too far away for the cabling to reach, you may need to invest in a KVM extender.

Yim adds that new CAT6 KVMs can minimize distance-related problems as a CAT6 cable with interface dongle can support up to 130 feet without signal weakness.

You could also invest in KVM over IP, which lets staff control servers from anywhere using an Internet connection. The KVM over IP switch will also feature an encryption protocol that will help secure the data you send over the network.

“KVM over IP allows the servers to be further away from the KVM switch; however, Service Access Modules (SAMs) are required,” Beene says. “You have to weigh the cost vs. the benefits. In large organizations with distributed systems, KVM over IP is an easy method of administration and management.”

✓ *Plan For The Future*

Clark says you need to consider the flexibility of the system you are buying. “How do units chain together and how does chaining affect performance (video bandwidth, etc)?”

Be sure to factor in future additions or purchase a KVM that can daisy chain or cascade to avoid having stranded assets you outgrow, Femrite says. Pay attention to the cost, benefits, and expandability of the KVM switch. **P**

## KEY TERMS

**Cascading.**

Connecting KVM switches together in a chain by attaching one switch to the computer port of another.

**Converter.**

Converts the KVM signal from one platform to another.

**KVM extender.**

Allows the KVM signal to travel over a greater distance than it would have previously.

**KVM over IP.**

The ability of the local or remote user to monitor and access the entire data center and remote offices over the Internet using a Web-based browser.

**KVM sharing.**

Enables multiple users to access the same KVM.

**Matrix switching.**

The ability to have multiple users access multiple target devices independently.

## BUYERS’ CHECKLIST

Anthony Yim, general manager of Austin Hughes Solutions Inc. (510/794-2888; [www.austin-hughes.com](http://www.austin-hughes.com)) offers this list of features to look for:

- ✓ Do you need traditional DB-15 cables or CAT6 cables with an interface dongle?
- ✓ Does the KVM support secure IP remote access?
- ✓ Do you need a single local console or multiple consoles with IP remote access features?
- ✓ Will the KVM be standalone or integrated with an LCD keyboard drawer?
- ✓ Will you have a single user or concurrent users?
- ✓ Does the KVM have multiplatform connectivity so you can mix legacy hardware platforms between DVI, USB, PS2, and Sun solutions?

# BUYING TIPS: PDUs



**PDUs HAVE EVOLVED** into integral components of a modern power distribution infrastructure. “A well-thought-out data center power distribution implementation will lead to reduced downtime and improved power monitoring management and control capabilities and drive greater energy efficiency,” says Bob Parente, sales engineer at Server Technology (800/835-1515; [www.servertech.com](http://www.servertech.com)). Here’s what to look for.

✓ *Take Inventory Of Your Needs*

Brett Femrite, director of business development at Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says to do your homework prior to making a PDU purchase. “It is critical that the PDU you select match up with your power consumption needs and server/network equipment.”

Make note of whether you can daisy-chain for added capacity, which could save money later. Femrite says other key factors to consider include form factor (vertical/horizontal, rack/wall-mountable, or 0U) and the amperage the PDU needs to support.

Be sure to perform full load testing during evaluation to determine heat rise of the internal connections, says Alex North, director of business development at BayTech (800/523-2702; [www.baytech.net](http://www.baytech.net)). And make sure the PDUs you purchase have the correct outlets and outlet counts, says Andy Grav, technical sales engineer at HM Cragg (800/672-7244; [www.hmcragg.com](http://www.hmcragg.com)).

✓ *Understand The PDU Options*

Femrite says there are generally three types of PDUs: basic, metered, and switched. A basic PDU lacks monitoring and remote administration capabilities. A metered PDU adds a meter that lets users visually track amperage and management software to monitor the aggregate current being drawn on each PDU. Switched PDUs add local and remote control capabilities on a per-outlet level. Redundancy is also important, Femrite says. A dual-circuit PDU offers added fault tolerance with two power inputs.

BayTech’s North says most rack PDUs look similar. “Evaluators need to open up the hood of all PDUs they are considering and use sound engineering-based judgment to evaluate the method of power distribution the manufacturer employed in the strip.”

✓ *Think Intelligent*

“When thinking about PDUs, think intelligently,” says Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; [www.siemon.com](http://www.siemon.com)).

The real-time monitoring capabilities of intelligent PDUs play a key role in spotting and preventing problems, she says, adding that alarms should identify power and environmental problems and give the data center manager the ability to remotely restart or shut down equipment. “The cost delta between basic PDUs and fully featured intelligent PDUs is negligible when compared to cabinet equipment and energy costs,” she says.

Today’s lights-out data centers are using switched and managed PDUs, Grav says. “Both of these options allow the end users

to monitor the data center from a distance while still having control of the equipment by remotely logging into the PDU and being able to cycle stuck equipment off/on,” he says.

✓ *Account For Growth*

Make sure the PDU can handle your needs both now and into the future. “If you don’t precisely match up the PDU with your power consumption needs, taking into account anticipated growth/increases, you can wind up having a breaker tripped,” Femrite says.

## BUYERS’ CHECKLIST

Bob Parente, sales engineer at Server Technology (800/835-1515; [www.servertech.com](http://www.servertech.com)), recommends asking these questions when selecting a PDU:

- ✓ What is the expected maximum power needed to the rack?
- ✓ What voltage can be supplied to the rack?
- ✓ Does the expected max power include planned power redundancy and growth?
- ✓ Will each rack be designed for power redundancy with a standard A and B Input feed configuration?
- ✓ What types of devices are being connected in the rack?
- ✓ Single or dual power supply devices?
- ✓ Do you know the power factor for the devices within the rack?
- ✓ How many and what types of outlets are required? (C19, C13, NEMA 5-20R, etc.)
- ✓ What racks are being used? (mounting considerations)

## KEY TERMS

### Intelligent PDU.

Any PDU that offers Web-based management, meter power at both the PDU and individual outlet level, and real-time power monitoring.

### Three-phase wye.

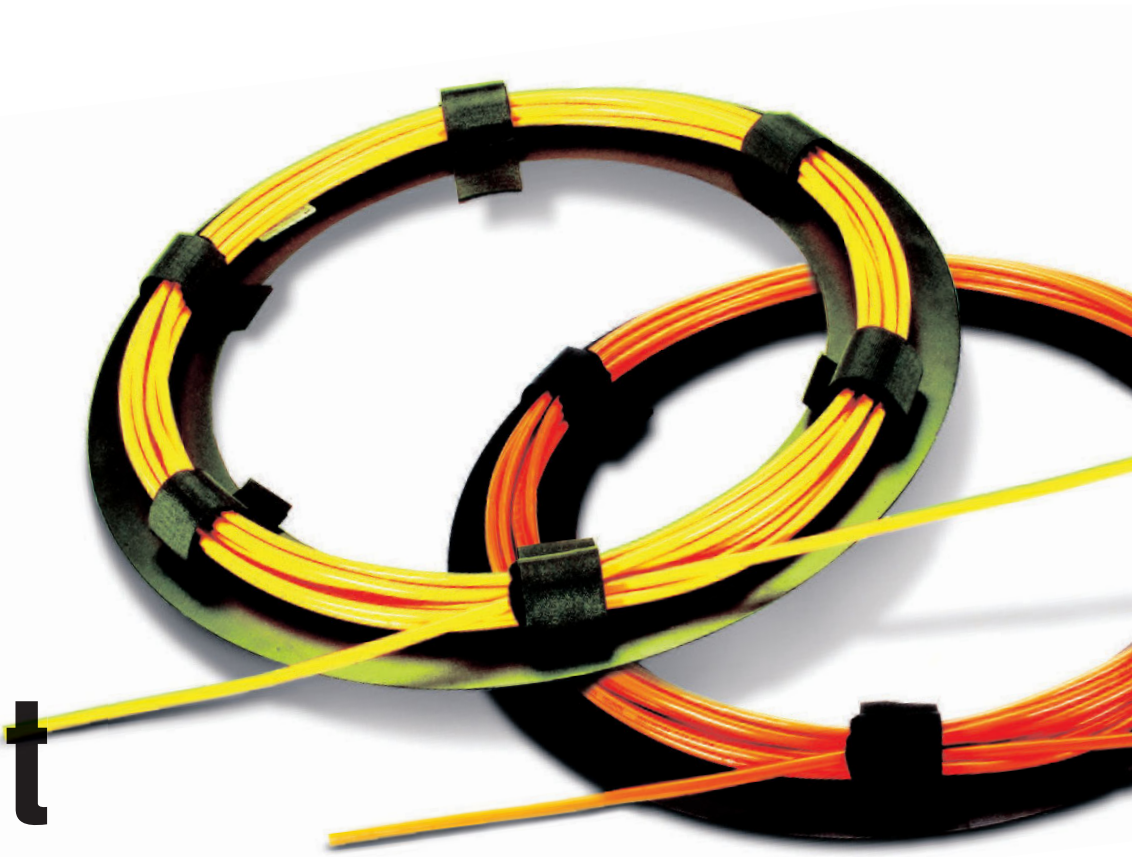
This system has a neutral wire that allows the three-phase system to provide a higher voltage (line-to-line, e.g. 208V) while still supporting lower-voltage single-phase (line-to-neutral, e.g. 120V) appliances.

### Zero-U mounted PDU.

Most PDUs mount horizontally in standard EIA 19-inch cabinets. Cabinet designs that leverage the vertical space between cabinets to create a zero-U cabling zone for PDU mounting and cable management offer space and airflow advantages.

BUYING TIPS:

# Cable & Airflow Management



**MANAGING CABLES** is an afterthought. That’s an unfortunate reality among many data centers, says Ken Koty, sales engineer at PDU Cables (866/631-4238; [www.pducables.com](http://www.pducables.com)). Among other things, poor cable management leads to performance problems and issues with troubleshooting and airflow.

✓ *Know What’s Available*

Brett Femrite, sales manager at Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says well-designed patch cable storage managers, which house and cover patch cords between patch panels and devices, are popular. He says they are not only functional in helping reduce cable sprawl, but they are also bend-radius-compliant and offer cosmetic appeal. Other cable management options include horizontal and vertical wire managers (which can be mounted on the front or rear of your equipment rack or cabinet), cable ladders, a large assortment of cable trays and conduits, and various wire minders (rings) that can be mounted on any rack system.

Also very popular, Femrite says, are vertical and horizontal lacer bars. “These bars can be mounted on a rack or within a cabinet and have slots through which Velcro enclosures or cable wraps are routed to hold groups of cable,” he says.

Carrie Higbie, global director of data center solutions and services at Siemon (860/945-4200; [www.siemon.com](http://www.siemon.com)), says larger and wider cabinets, such as the 48-inch deep cabinets many companies are purchasing today, can allow for vertical patching or even just more room for power and communications cabling. Baffles for side discharge equipment are an important part of managing airflow.

✓ *Plan For Expansion*

Laura Viars, senior sourcing specialist at Rackmount Solutions, says to be sure your cable management configuration allows for future equipment additions. Do this by making certain managers (both in-rack cable managers and external trays and ladders or conduits) don’t meet or exceed their fill capacities. Most management options are available in multiple sizes, she says, ensuring a fit with plenty of excess if needed.

Also seek solutions with the flexibility to add new equipment or troubleshoot an existing component. “Lean toward reusable options such as Velcro straps in lieu of cable ties and managers that allow easy access to their contents,” she says. If you expect rapid and near-term growth, keep cables loosely organized during implementation by cutting

down on the bundling and by using managers (D-rings vs. managers with covers) offering easier access.

✓ *Avoid The Swing Arm*

Server-mounted swing arms are a common solution for cable management, Higbie says, but they actually cause problems with airflow and cooling. “Swing arms route cable horizontally across the equipment, blocking exhaust fans and spaces critical to proper hot aisle/cold aisle airflow,” she says.

You can eliminate server swing-arm doors by routing cords and cable directly into zero-U vertical patch panels or cable management channels, Higbie says, which dramatically reduce the airflow disruption in the horizontal

cabinet space seen in traditional cabinets with swing-arm doors. “Plus, you get greater cable capacity, simpler cable management, and a much better looking installation.”

✓ *Consider Color & Labeling*

Koty says when possible, use color coding to help visually identify and trace cables and simplify management. With data cables, use color to identify the cable’s role/function or connection type. With power cables, use color to identify and organize dual-power feeds for redundant power sources. Secure labels so they’re accessible but difficult to remove. Also, maintain a spreadsheet that identifies the cables and colors, where cables come from and go, and configurations. <sup>P</sup>

## BUYERS’ CHECKLIST

- ✓ **The basics.** Laura Viars, senior sourcing specialist at Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)), says no matter the size of installation planned, you’ll likely need basic management items such as vertical managers to bundle cable along the height of the racks/cabinets; horizontal managers to bring the cabling neatly from the drop to the equipment; and Velcro straps to bundle cables as needed.
- ✓ **Testing.** Pre-test all cable before installing, says Ken Koty, sales engineer at PDU Cables (866/631-4238; [www.pducables.com](http://www.pducables.com)). Once installed, it’s more difficult to test and identify problems.
- ✓ **Think about heating and cooling.** Where heating and cooling efficiency are concerned, Koty says, using overhead racking for network and storage cables will prevent air dams from forming under the floor. Also, be sure your cable management solution keeps cabling out of the way of exhaust fans in cabinets, he says.

## KEY TERMS

- Cable bend radius.**  
The minimum radius a cable can acceptably bend and still function as intended.
- TIA/EIA.**  
The TIA (Telecommunications Industry Association) and EIA (Electronic Industries Alliance) provide best practice guidelines regarding cabling infrastructure.

BUYING TIPS:

# Data Center Furniture



**FURNITURE IS THE REAL BACKBONE** of your data center. That’s why purchasing furniture that matches your needs is essential. Here’s what to keep in mind.

✓ *Know Your Company*

The furniture you choose depends on the services your company provides. “Some companies need conference room furniture for secure and private consultations, and others, such as network centers, might utilize server cabinets or colocation cabinets and racks,” says Susan Wynne, senior sourcing specialist at Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net))

✓ *Research Available Vendors*

A solid data center furniture vendor will have a long track record of providing high-quality products and services. That ensures you can view it as a partner and work with the company for years to come. “You want a vendor that you can invest in for the future,” says Eli Hertz, CEO and president of Hergo (888/222-7270; [www.hergo.com](http://www.hergo.com)). “You don’t want to deal with a company that will only be around for a one-time purchase.”

Also, be sure to research all of your available options. “Look for a reputable company with knowledgeable sales staff and one with short lead times,” Wynne says. She also recommends spending more money upfront on quality products from a long-standing vendor. “The initial investment may be more

than you wanted to spend, [but] the furniture will stand the test of time.”

✓ *Check For Quality*

Once your budget is established, you can get the best value for the dollars you spend by looking for the best materials for your price range. For example, the frame makes a big difference in a piece of furniture’s durability. Especially for desks, a steel frame with cross-supports is going to be the most durable model. As for surfaces, high-density laminate and high-density pressboard are good choices.

✓ *Make Sure It Fits The Space*

Before buying furniture, do some planning first, Wynne says. “Know the function of the room. Have in mind a design or layout of the space you’re wanting to create. A sketch or draft of the room with the various components in place is helpful,” she says.

Know the dimensions of the space and furniture to ensure you meet requirements. Also helpful is knowing how a workstation will be used and by how many people to ensure overall comfort. Be sure to note whether the surface of the furniture has a lip of some kind that makes it wider at the top than at the bottom, and don’t forget to leave space for drawers to pull out in cabinets or for people to work in front of the furniture.

Marking the space with tape can show you how much space the furniture takes up as well as what kind of walking space will be

left over once it’s there. If you prefer not to do it yourself, many furniture vendors offer design templates or free space planning.

✓ *Use Your Space Efficiently*

You can save money without sacrificing quality by making sure you are using space efficiently. One way to do this is to go vertical rather than horizontal, possibly by investing in pieces of furniture that are wall-mountable. “Office and lab space is at a premium,” says Kristen Speranza-Diamond, vice president at Hergo. “It’s beneficial to go vertical and make the best use of square footage.”

Speranza-Diamond says that most necessary pieces of furniture and equipment for data centers are becoming less expensive, “so everyone is upgrading and making the transition to go compact.” Manufacturers are putting more advanced technology into smaller packages, which will help you put more equipment into each piece of furniture.

✓ *Focus On The Future*

Be sure to look for key features, such as height-adjustment for chairs or cable management systems for racks. If you invest in modular furniture with swappable pieces, you’ll have room for future growth, Wynne says.

Choose furniture that will have a long lifespan. “You have to know that your current furniture will still be available in six or 12 months should you wish to duplicate or expand,” Wynne says. <sup>1</sup>

## KEY TERMS

**Adjustable height.**

Refers to components users can raise or lower for a better individual fit. Some higher-end furniture can be adjusted electronically.

**Cable management.**

Built-in grommets, channels, or other features to manage cables and wiring.

**Modular.**

Furniture components that are interchangeable or can be easily modified.

## BUYERS’ CHECKLIST

- ✓ **Seek out quality.** Although looking for deals can help companies on a tight budget, sacrificing quality as a result can end up costing companies more in the long term, especially if buying from vendors that don’t offer lifetime warranties on furniture.
- ✓ **Know the delivery terms.** Determine if the delivery includes bringing it inside the facility, requires a lift gate or loading dock, and includes assembly or puts the responsibility on you or a third-party installer.
- ✓ **Go modular when possible.** Buying components that are interchangeable lets you modify the setup to meet changing needs, including downsizing or expanding space. Increasingly, individual furniture units can be mixed and matched and layout configurations easily altered.
- ✓ **Build vertically.** Purchase components that support building vertically for better space efficiency.

BUYING TIPS:

# Data Center Cleaning Services



A CLEAN DATA CENTER IS CRUCIAL to the performance of your physical infrastructure and the productivity of your workforce, but you can't rely solely on your janitorial staff to get the job done. Here's what to look for when hiring a data center cleaning service.

✓ *Check A Service Provider's Experience & Reputation*

It's important that you don't rush in to choosing a data center cleaning service, because there are multiple factors to consider that may make one firm fit your needs better than another. Not every data center is created equal, and many data centers have unique cleaning needs that not all cleaning services can address.

Find out exactly what services a cleaning firm offers and what kind of quality you can expect. The cleaning service should be able to provide a detailed list of what it cleans and how thorough it will be.

You should also research what cleaning firms offer and look at their reputation and guarantees. Jason Gutierrez, vice president of Environmental Maintenance Solutions (800/962-3310; [www.ems-clean.com](http://www.ems-clean.com)), says you need to ask whether the service provider has the proper insurances, how long it's been in business, and if it has a local presence and is legally allowed to work in your state.

The company should spend considerable time and effort training technicians and staying up to date with the latest equipment and industry trends. "If the technicians working in your environment do not understand the environment and the consequence of downtime, then you're using the wrong company," he says. "Simple questions like what does the EPO button do, or what type of cable is a fiber-optic cable, or what is the function of a router should be easily answered by a reputable cleaning firm."

✓ *Understand Your Costs*

Don't let price fool you. A lot of factors go in to the overall price of a cleaning service, and you should make sure you get exactly what you're paying for.


Be sure to look at what is being cleaned for the price you pay and the level of cleaning being performed. There may be specific situations, such as after construction or in the wake of a disaster, where you will need more in-depth cleaning services than on an annual floor cleaning. One type of cleaning may take more time than another, which could affect the overall pricing of the service, as well.

"Cost is affected by the frequency of cleaning and the frequency is also dictated by budget constraints, traffic in the environment, type of environment, and equipment housed in the environment," Gutierrez says.

Just like the tier system for data centers, he says, there is a tier system for cleaning. "Does equipment cleaning mean cleaning outside server racks or inside cabinets and actually cleaning the individual components? Does subfloor cleaning include removing all accessible tiles or just enough to gain access to the majority of the floor? Is the subfloor going to be vacuumed . . . and will the slab and floor support system wiped down as well? There are many levels of detail, and it's important to understand what quality you are receiving," he says.

✓ *Know What To Clean*

Some parts of your data center will need to be cleaned annually, while others will require quarterly or biannual cleanings. Create a cleaning schedule for the building itself as well as the equipment and stick to the plan.

Gutierrez says the accepted standard for cleaning to meet particulate contamination requirements is at least quarterly for above-floor cleaning and annual subfloor cleaning. Make sure your cleaning schedule covers all access floors and floor panels, walls, ceilings, light fixtures, server racks, UPS units, panels, and more. The best cleaning firms have practices in place that will leave no stone unturned. 

## BUYERS' CHECKLIST

- ✓ Check to see if your provider is a member of the Association of Data Center Cleaning Professionals.
- ✓ Get a detailed scope of work and periodically check the work in progress.
- ✓ Limit what types of liquids and/or chemicals are allowed in the data center.

## KEY TERMS

**Airborne contamination.**

Gaseous and particulate contamination that can lead to equipment failure; often gauged by particulate sampling.

**ISO 14644-1.**

An international standard for air cleanliness in cleanrooms and associated controlled environments.

**Particulate migration.**

The movement of contaminants from one sector or piece of equipment to another, often as a result of the contaminant changing form as it's crushed and spread.

**Plenum.**

An enclosed space (often beneath floors or in ceilings) used for HVAC, cabling, etc.

BUYING TIPS:

# Equipment Recycling & Disposal Services



**THERE COMES A TIME WHEN** enterprise equipment becomes outdated, needs to be replaced, or is simply no longer of use. Such situations require getting rid of the old to make room for the new. One option for dealing with old equipment is reusing it in another capacity, such as repurposing a once high-end server for an application that doesn't demand mission-critical performance. Another option is using a vendor that specializes in refurbishing, recycling, and disposing of old equipment.

In addition to handling equipment in an environmentally responsible manner, a vendor can ensure you abide by privacy and compliancy regulations. When it comes time for you to find an equipment recycling and disposal vendor, the following advice can help.

✓ *Educate Yourself*

Having a better understanding of the equipment recycling and disposal market is a key first step in the process. Nicholas Peterson, director of marketing at Critical Power Exchange (877/630-7520; [www.criticalpower.com](http://www.criticalpower.com)), says you need to know what you are recycling and have an idea of what prices are. "Separate your materials. Know scrap vs. refurbished. Know ferrous vs. non-ferrous metals. Know how to properly classify your materials," he says. These things will help you to make better decisions about what to do with your equipment and which equipment recycling/disposal vendor you choose.

✓ *Compare Providers*

When comparing service providers, examine what the services are offering, says Brett Femrite, director of business development for Rackmount Solutions (866/207-6631; [www.rackmountsolutions.net](http://www.rackmountsolutions.net)).

"Some of the larger companies charge for asset disposal, while others will pay you for the equipment. Smaller regional companies can often provide more cost-effective solutions because of local transportation, labor, and processing," he says. Companies that offer to pay you may provide revenue sharing and the ability to purchase other refurbished hardware. "Ask for referrals, performance reports, or projections up front. Looking at past disposal lists will make it easy to forecast what you can expect," Femrite says.

✓ *Check The Facilities & Processes*

One of the biggest mistakes enterprises make is having a lack of experience with their chosen recycler, Peterson says. That's why it's essential that you know several elements. "Where is the equipment going (landfill vs. repurpose vs. scrap)?," he says. What's the reputation of the recycler? "Does the recycler show concern for where the equipment came from? Are you getting fair dollar return on the recovered assets?"

Ask prospective vendors if you can physically inspect their facilities, what security

and surveillance they use, how they can assist with ROI for current projects, and what documentation processes they use.

Be sure to find out how equipment is picked up and handled, who pays for shipping and transport, how equipment is processed and how long it takes, where equipment winds up, when you will get paid, and if the vendor can assist in other ways such as providing new products or offering credit from old equipment. You also should check what current accounts the vendor has and if it uses downstream vendors and who they are.

✓ *Onsite Or Offsite Data Destruction?*

With data destruction, you have two choices: onsite or offsite. With an onsite service, you'll remove the need to deal with a chain of custody documentation. For data centers that store a lot of sensitive data and want to physically destroy the data, you'll enjoy the peace of mind that comes with watching the destruction take place.

If you want absolute destruction that's beyond any type of recovery, an offsite data destruction service may be ideal as service providers typically have more powerful shredders at their facilities than mobile shredder services can offer, plus a number of off-site data destruction services also double as a reprocessing center that can remarket the parts, so you can get some return value for your used equipment. **P**

## KEY TERMS

**Data wiping.**

A process used for compliance and privacy reasons in which data is entirely destroyed or erased from equipment such as hard drives.

**Refurbished for reuse.**

Old equipment that has been restored to be resold or donated for continued use rather than recycling individual components.

## BUYERS' CHECKLIST

- ✓ **Homework.** Compile a list of equipment you no longer need, then determine its resale value, what businesses might purchase the equipment, and how the resale value can help fund new purchases.
- ✓ **Qualifications.** Determine how long the prospective vendor has been in business, what its reputation is in the industry, and what compliancy and certification measures it operates by and has achieved.
- ✓ **Broker or provider.** Determine if the vendor actually provides recycling and disposal services or is just a broker of such services.
- ✓ **Process.** Clarify the methods the vendor uses to process equipment, including who handles equipment, where it goes, how long processing takes, and what documentation you can expect.

# Network With Your Peers

## At These IT Training & Association Meetings

### Across The United States

#### FEBRUARY

##### Project Management

Feb. 25  
New Horizons Tysons Corner  
2010 Corporate Ridge  
McLean, Va.  
www.dcnewhorizons.com

##### ISSA Inland Empire

Feb. 26, 11:30 a.m. to 1:30 p.m.  
Upland, Calif.  
ie.issa.org

##### AITP California Southland

Feb. 27  
Garden Grove, Calif.  
www.aitpcalsouthland.org

##### ISSA Ottawa

Feb. 28  
Novotel Ottawa Hotel  
33 Nicholas St.  
Ottawa, Ontario  
www.issa-ottawa.ca

#### MARCH

##### AITP Delaware

March 1, 5:30 to 8 p.m.  
Wilson Graduate Center  
31 Reads Way  
New Castle, Del.  
www.aitp.org/members/group\_content\_view.asp?group=75724&id=100570

##### SharePoint Technology Conference

March 3-6  
San Francisco, Calif.  
www.sptechcon.com

##### CompTIA Network Certification

March 11  
New Horizons Lexington  
1050 Chinoe Road, Suite 208  
Lexington, Ky.  
www.nhlexington.com

##### AITP Richmond

March 12  
Hilton Garden Inn at Innsbrook  
4050 Cox Road  
Glen Allen, Va.  
www.aitprich.org

##### AITP Wheeling

March 13  
White Palace at Wheeling Park  
1801 National Road  
Wheeling, W.Va.  
www.aitp-wheeling.org

##### AITP Washington, D.C.

March 14  
Alfio's La Trattorio Restaurant  
4515 Willard Ave.  
Chevy Chase, Md.  
www.aitpdc.org

##### Administering Windows Server 2012

March 18  
New Horizons Nashville  
227 French Landing Drive, Suite 400  
Nashville, Tenn.  
www.nhnashville.com

##### Planning & Managing Windows 7 Desktop Deployment

March 18  
New Horizons Tysons Corner  
2010 Corporate Ridge  
McLean, Va.  
www.dcnewhorizons.com

##### AITP Southwest Missouri

March 19  
High Street Baptist Church  
900 North Eastgate Ave  
Springfield, Mo.  
aitpspringfield.org/main.html

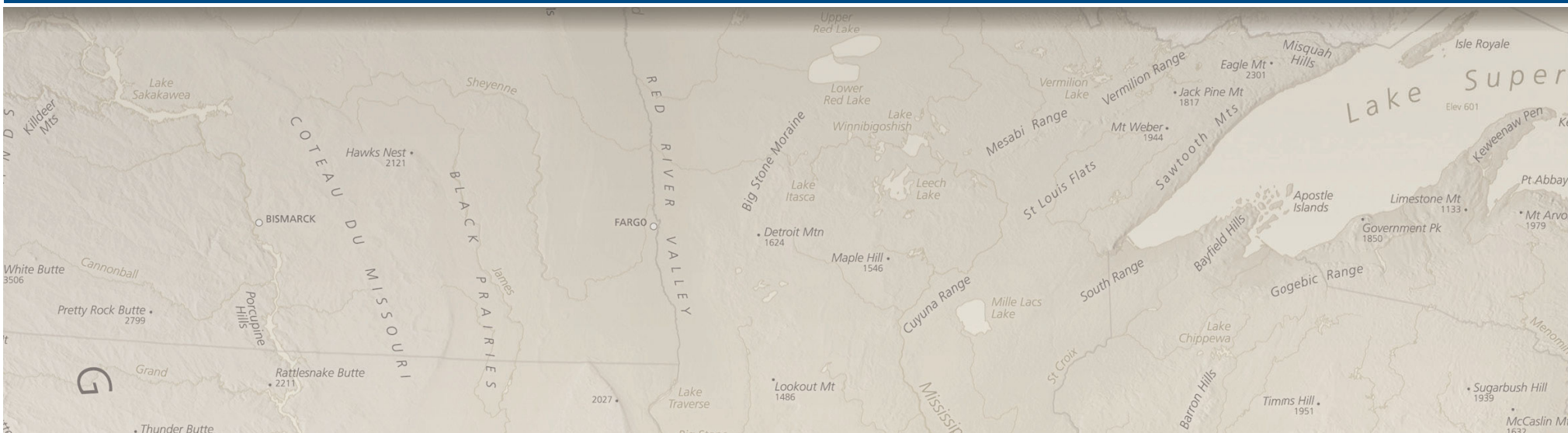
##### AFCOM Greater Tampa Bay Chapter

March 20, 12:30 to 4 p.m.  
www.tampabayafcom.com

##### AITP Northeastern Wisconsin

March 20  
Holiday Inn Appleton  
105 S. Nicolet Road  
Appleton, Wis.  
new.aitp.org/eventsmeeting-info

Upcoming IT Events



AITP Cornhusker

March 21, 5:30 to 7 p.m.  
Eatery Restaurant  
2548 S. 48th St.  
Lincoln, Neb.  
www.aitpcornhusker.org

Configuring & Managing Microsoft SharePoint 2010

March 25  
New Horizons DC  
1331 F St. NW, Suite 240  
Washington, DC  
www.dcnewhorizons.com

AITP Akron

March 26  
Akron, Ohio  
www.akron-aitp.org

ISSA Inland Empire

March 26, 6:30 to 8:30 p.m.  
Upland, Calif.  
ie.issa.org

AITP California Southland

March 27  
Garden Grove, Calif.  
www.aitpcalsouthland.org

ISSA Baltimore

March 27  
Concurrent Technologies Corp.  
8530 Corridor Road  
Savage, Md.  
www.issa-balt.org

Mastering Microsoft Project 2010

March 27  
New Horizons Tysons Corner  
2010 Corporate Ridge  
McLean, Va.  
www.dcnewhorizons.com

ISSA Ottawa

March 28  
Novotel Ottawa Hotel  
33 Nicholas St.  
Ottawa, Ontario  
www.issa-ottawa.ca

APRIL

Big Data TechCon

April 8-10  
Boston, Mass.  
www.bigdatatechcon.com

AITP Wheeling

April 10  
White Palace at Wheeling Park  
1801 National Road  
Wheeling, W.Va.  
www.aitp-wheeling.org

AITP Washington, D.C.

April 11  
Alfio's La Trattorio Restaurant  
4515 Willard Ave.  
Chevy Chase, Md.  
www.aitpdc.org

AITP Richmond

April 16  
Hilton Garden Inn at Innsbrook  
4050 Cox Road  
Glen Allen, Va.  
www.aitprich.org

AITP Southwest Missouri

April 16  
High Street Baptist Church  
900 North Eastgate Ave  
Springfield, Mo.  
aitpspringfield.org/main.html

AITP Northeastern Wisconsin

April 17  
Holiday Inn Appleton  
105 S. Nicolet Road  
Appleton, Wis.  
new.aitp.org/eventsmeeting-info

Developing Microsoft SQL Server 2012 Databases

April 22  
New Horizons Nashville  
227 French Landing Drive, Suite 400  
Nashville, Tenn.  
www.nhnashville.com

AITP California Southland

April 24  
Garden Grove, Calif.  
www.aitpcalsouthland.org

Do you have an event you'd like to see listed?  
Send an email to feedback@processor.com.



# Right Here!

## All In A No-Nonsense Format

Product Overviews • Leading Manufacturers • Technology News & Information



# Don't Miss A Single Issue.

Call 800-334-7458 or go to [www.processor.com](http://www.processor.com)


# Processor Solutions Directory

Here are brief snapshots of several companies offering products designed for the data center and IT industry. Listings are sorted by category, making it easy for you to find and compare companies offering the products and services you need.

You can find more detailed information on these companies and the products they offer inside this issue.

To list your company and products, call (800) 247-4880.

PHYSICAL INFRASTRUCTURE



Critical Power Exchange buys and sells mission-critical backup power and cooling system equipment typically used in computer rooms, datacenters and other industrial applications. Founded in 1993, CPE is your single point of contact for disposal or acquisition of reliable datacenter, environmental and mission-critical power equipment.


**Products Sold:**

- Generators
- Transformers
- UPS Systems
- Power Distribution Units

- Raised Access Flooring
- Switchgear
- Fire Suppression
- Air Conditioners

(877) 630-7520 | www.criticalpower.com

PHYSICAL INFRASTRUCTURE




Atlas has specialized in portable air conditioning since 1979 and leads the industry in server room and data center portable cooling. We offer “24/7” response from company-owned, full-service offices around the country, each stocked with a wide inventory of equipment for primary, supplemental, or emergency cooling. All portable items are available for sale or rental. Atlas is a Preferred MovinCool® Distributor and a GSA Certified MAS Contractor.

**Products Sold:**

- 1-5 ton portable air conditioners, air and water-cooled
- 12-ton portable coolers designed to roll through a standard doorway
- Ceiling-mount air conditioners – full line of MovinCool® packaged a/c units

(800) 972-6600 | www.AtlasSales.com

PHYSICAL INFRASTRUCTURE



Headquartered in Connecticut, Siemon has been around since 1903 as a provider of high-quality cabling solutions designed to improve network connections, performance, and efficiency. The company manufactures end-to-end copper and fiber cabling systems, cabinets, racks and cable management solutions for data centers, and more. Siemon also has an R&D arm, Siemon Labs, which focuses heavily on innovation and shows the company's long-term commitment to its customers.


**Products Sold:**

- Cable management solutions
- Data center cabinets and racks
- End-to-end copper and fiber cabling

- High-speed interconnects
- Intelligent infrastructure management

(860) 945-4200 | www.siemon.com

PHYSICAL INFRASTRUCTURE




Rackmount Solutions' mission is to listen to the IT engineer's specific needs and deliver superb-quality, high-performance products through continuous product innovation and operational excellence. We pride ourselves in providing quality customer service, products that fit your IT requirements, and solid value for your money.

**Products Sold:**

- Wallmount and server racks and cabinets, including sound proof, air conditioned, and large cable bundle
- Desktop/tabletop portable racks
- Shockmount shipping cases
- Bulk cable

(866) 207-6631 | www.rackmountsolutions.net

PHYSICAL INFRASTRUCTURE




AVTECH Software, founded in 1988, is focused on making the monitoring and management of systems, servers, networks, and data center environments easier. AVTECH provides powerful, easy-to-use software and hardware that saves organizations time and money while improving operational efficiency and preparedness. AVTECH products use advanced alerting technologies to communicate critical status information and can perform automatic corrective actions.

**Products Sold:**

A full range of products that monitor the IT and facilities environment, including temperature, humidity, power, flood, room entry, and UPS

(888) 220-6700 | www.AVTECH.com

PHYSICAL INFRASTRUCTURE



Since 1979, Simplex Isolation Systems has been setting new design standards in modular expandable cleanroom components, isolation curtains, hardware, and new product development. Fontana, Calif.-based Simplex's unique strip doors and mounting systems are designed for quick installation. Simplex parts and materials perform with optimum efficiency, last longer, and save you money. And with Simplex, you are always backed by industry expertise, product knowledge, and the best warranties in the market.


**Products Sold:**

- Cleanrooms
- Enclosures

- Strip doors
- Curtains

(877) 746-7540 | www.simplexisolationssystem.com

PHYSICAL INFRASTRUCTURE




The Mestex division of Mestek is comprised of seven company brand names: Applied Air, LJ Wing, Aztec, Alton, Temprite, Koldwave, and Sierra. Mestex is involved in emerging technology and product research focused on using energy and water more efficiently, including ways to improve data center efficiency by using outside air, evaporative cooling, and optimized DDC control schemes.

**Products Sold:**

- Mechanical and evaporative cooling products
- Heating products
- Outside air tempering products
- Packaged evaporative cooling solutions for mission-critical applications

(214) 819-5262 | www.mestex.com

PHYSICAL INFRASTRUCTURE




LINDY USA specializes in cables, adapters, electronics and accessories for computer, networking and audio video applications. Since 1932 Lindy has supplied high quality interconnects to customers in commercial, telecom and residential markets. What sets us apart is our complete dedication to innovation, performance and reliability. Our cabling products are truly outstanding.

**Products Sold:**

- Networking Products • Audio / Video • KVM • Sharing, Converting, Extending • USB and FireWire • Input Devices • Add-On Cards • Hardware and Security • Power • Cables • Adapters and much more!

(888)-865-4639 | www.lindy-usa.com/

PHYSICAL INFRASTRUCTURE




PDU Cables is the leading supplier of power distribution cables assemblies to data centers in North America. PDU Cables has been serving this industry since 1981 and is the first independent cable assembly company to introduce colored conduit into the power distribution cable market, the first to get UL 478 listing, and the first to introduce the Power Cable and Equipment Configurator software tool. The company is centrally located in Minneapolis, Minn., allowing it to offer 24-hour turnaround and shipping time of just one or two days to almost any United States destination.

**Products Sold:**

A range of power cables, cable seals, and power cord assemblies.

(866) 631-4238 | www.pducables.com

PHYSICAL INFRASTRUCTURE



Data Aire, Inc. has been designing and manufacturing precision cooling equipment for more than 40 years. We established some of today's industry standards, such as scroll compressors, steam generator humidifiers and microprocessor controllers. Our equipment can be found in any size organization or data center, from a closet to a Fortune 500 financial data center or government high security operation center. With our experience and expertise we can, and are willing, to design and build equipment to meet our customer's needs. With the shortest delivery times in the industry Data Aire can meet your requirements.


**Products Available:**

- Floor Mounted Units – CRAC or CRAH
- Ceiling Mounted Units
- Rack and Row Solutions

- Specialty Units
- Heat Exchangers
- System Controls

(800) 347-2473 | www.dataaire.com

PHYSICAL INFRASTRUCTURE



Founded in 1995, Austin Hughes Electronics Ltd is a design and manufacturing group that offers a broad range of solutions based around 19 inch rack mount technology. With a wealth of experience Austin Hughes design and development teams are focused to rapidly transform customer requirements and market trends into saleable solutions.

**Products Sold:**

- Infra solution Cabinet Smartcard Handels
- InfraPower Cabinet Intelligent PDUs
- CyberView Rackmount KVM & LCD Console Drawer
- Environmental Sensors

(510) 794-2888 | www.Austin-Hughes.com

PHYSICAL INFRASTRUCTURE




Sensaphone has been designing and manufacturing remote monitoring systems for more than 25 years and has more than 300,000 of its products in use. Sensaphone's product lineup offers a full range of devices with a broad number of features and applications designed to monitor your entire infrastructure and alert you to changes. All product engineering functions, including hardware and software design and circuit board layout and assembly, are performed at the Sensaphone facility in Aston, Penn.

**Products Sold:**

Remote monitoring solutions that provide email and voice alarm notification for problems related to temperature, humidity, water detection, power failure, and more.

(877) 373-2700 | [www.sensaphone.com](http://www.sensaphone.com)

PHYSICAL INFRASTRUCTURE



PDUdirect.com is a Master Distributor of select Server Technology PDUs for server and networked environments. PDU Direct's basic, metered, and switched Rack PDUs provide local and remote power management, power monitoring, and environmental monitoring. We pride ourselves in offering industrial-grade quality products at the lowest prices, with the fastest shipping (most orders shipped within 24 hours) and simplest purchase process. We are the Power Behind the Business.

**Products Sold:**

A complete line of metered and basic PDUs, and 20A switched PDUs.

(888) 751-7387 | [pdudirect.com](http://pdudirect.com)

PHYSICAL INFRASTRUCTURE



Based in New York City, Hergo Ergonomic Support Systems is an independent designer and manufacturer of enclosure cabinet solutions, technical computer furniture, and modular racking systems. The company's products are designed to promote organization in the workspace and to increase the productivity of computers, peripherals, and communications equipment. Hergo is known for its high-quality products and superior customer service.

**Products Sold:**

- Racks
- Enclosures/cabinets
- Motorized workstations
- Flat-panel arms

- Computer desks
- Cable management
- Power management

(888) 222-7270 | [www.hergo.com](http://www.hergo.com)

PHYSICAL INFRASTRUCTURE




Staco Energy was founded in 1937 and is one of the longest-lasting innovators of power products and services in the world. Our recent innovations have created the foundation for entry into the SMB data center marketplace through pioneered design and expertise. We are committed to providing you with the best tailored power solutions for your needs.

**Products Sold:**

A full line of UPS products, including our new FirstLine P 65 – 250kVA UPS, FirstLine PL 10 – 100kVA UPS, FirstLine BMS, and related accessories and services.

(866) 261-1191 | [www.stacoenergy.com](http://www.stacoenergy.com)

PHYSICAL INFRASTRUCTURE




Server Technology is committed to the PDU market with the largest group of engineers dedicated to power distribution and other solutions within the equipment cabinet. Advancements in device power monitoring help data centers monitor and improve their efficiency, and continuous research and development is fueled by companies that look to Server Technology for their custom cabinet power solutions.

**Products Sold:**

A complete line of cabinet PDUs, including Per Outlet Power Sensing (POPS), Rack Mount Fail-Safe Transfer Switch, Console Port access with remote power management, Switched, Smart, Metered, Basic, and -48 VDC

(800) 835-1515 | [www.servertech.com](http://www.servertech.com)

PHYSICAL INFRASTRUCTURE



RackSolutions has been serving the data center market for more than 10 years. All of our products are designed, engineered, built, and shipped under our own roof. We have product solutions available for every major OEM, but if one of our existing products doesn't fit your needs, our top-notch mechanical and electrical engineers can create the item you need from scratch, solving even the toughest installation design challenges. Best of all, we typically don't charge up-front fees for design services.

**Products Sold:**

Computer server racks, cabinets, shelves, and mounting products.

(888) 903-7225 | [www.racksolutions.com](http://www.racksolutions.com)

PHYSICAL INFRASTRUCTURE




BayTech was founded in 1976 and, since the 1990s, has developed unique products for remote power management. The company uses printed circuit board instead of wires for a better, more resilient connection between the data center equipment and the receptacle. BayTech provides an extensive Web site with brochure downloads, warranty information, and reseller support and also offers evaluation units for data centers.

**Products Sold:**

- Power control, distribution, management, and metering
- Power transfer switches
- Console management and remote site management

(800) 523-2702 | [www.baytech.net](http://www.baytech.net)

STORAGE




Founded in 1991, Aberdeen is a leading manufacturer of servers and storage options for IT departments. Aberdeen products can be found in many of today's high-tech corporations, as well as government agencies, hospitals, and universities. Aberdeen prides itself on unmatched customer service, open and honest communications, long-term commitments to working relationships, and personal and professional integrity.

**Products Sold:**

- Components/parts
- Servers (barebones, custom, rackmount, and storage)
- Software
- Storage (DAS, iSCSI SAN, JBOD, NAS, SAN)

(800) 500-9526 | [www.aberdeeninc.com](http://www.aberdeeninc.com)

STORAGE



As the storage architecture authority, Area Data Systems has a 25-year track record of success built on the ability to deliver its clients cost effective, reliable and scalable storage for Cloud and Big Data solutions.

Area Data believes that storage solutions are not a one size fits all paradigm. The Area Data solution cycle employs an "engineer-to-engineer" approach to discover potential challenges to success for clients. Area Data will design, validate and recommend the appropriate industry certified storage solutions tailored to the needs of each client, based upon real world performance testing.

**Products Sold:**

- Storage solutions

(714) 993-0300 | [www.AreaSys.com](http://www.AreaSys.com)

SERVERS



Supermicro® (NASDAQ: SMCI), the leading innovator in high-performance, high-efficiency server technology, is a premier provider of advanced server Building Block Solutions® for enterprise IT, data center, cloud computing, HPC, and embedded systems worldwide. Supermicro is committed to protecting the environment through its "We Keep IT Green®" initiative by providing customers with the most energy-efficient, environmentally-friendly solutions available on the market.

**Products Sold:**


- Servers
- Motherboards
- Chassis

- Network switches
- Storage solutions
- Blade servers

- GPU servers
- Embedded

(408) 503-8000 | [www.supermicro.com](http://www.supermicro.com)

SERVERS




Chenbro is a leader in enclosure solutions, selling its products primarily to system integrators and OEM and channel partners. The company's extensive research and development efforts help it to keep its competitive edge and maintain market leadership, with special focus on thermal, EMI, and acoustic solutions. Taiwan-based Chenbro has offices in the United States, UK, The Netherlands, and China.

**Products Sold:**

- A comprehensive line of PC chassis, server/workstation chassis, rackmount chassis, and HDD enclosures.

(909) 947-3200 | [www.chenbro.com](http://www.chenbro.com)

CLIENTS



The Smart Choice for Text Retrieval® since 1991, dtSearch® offers over 21 years of experience in parsing and searching data. The dtSearch product line includes enterprise and developer text search products, meeting some of the largest-capacity text retrieval needs in the world. dtSearch's website offers hundreds of developer case studies and press reviews. The company has distributors worldwide, including coverage in six continents.

**Products Licensed:**

Text retrieval products, including:

- Desktop with Spider
- Network with Spider
- Publish (for portable media)

- Web with Spider
- Engine for Win & .NET
- Engine for Linux

(800) IT-FINDS | [www.dtsearch.com](http://www.dtsearch.com)

SERVICES



For over 30 years, EMS has been cleaning and maintaining mission critical environments. We have become the premier company in the Northeast by incorporating new procedures and products in our service that keep us at the forefront of the rapidly evolving IT industry. Whether it's a one time cleaning or continuous maintenance services, EMS can develop a program that works for you.

EMS Specialized Services Include:

- Data Center Cleaning
- Sensitive Equipment Cleaning
- Access Floor Tile Repair / Reconditioning
- Sub-Floor Decontamination
- 24/7 Disaster Recovery
- Data Center Best Practices Analysis
- Power & Cooling Optimization

(914) 747-1583 | [www.emsclean.com](http://www.emsclean.com)

EQUIPMENT DEALER



In 1987, Pegasus Computer Marketing started providing mainframe products to the end-user market. What began as a sales-only organization soon adapted to offer in-house repair and refurbishment. During the past 10 years, Pegasus has focused primarily on the point-of-sale and barcode industries, buying, selling, and providing service contracts for anywhere from a few scanners to hundreds.

Products Sold:

We buy, sell, and service:

- Point-Of-Sale Equipment and POS/PC Flat Panels
- Wired and Wireless Barcode Hardware
- Kronos Time Clocks and Accessories

(800) 856-2111 | [www.pegasuscomputer.net](http://www.pegasuscomputer.net)

We Know You're Busy

That's why we make sure each issue of *Processor* provides comprehensive information in a quick, easy-to-read format.

It's all available both in print and online at [www.processor.com](http://www.processor.com).

Call (800) 334-7458 to subscribe to Processor or go to [www.processor.com](http://www.processor.com) to read articles and view thousands of products online free of charge to qualified readers.

PROCESSOR



Processor is produced by Sandhills Publishing.

Founded in 1978, Sandhills Publishing is an information processing company with a diverse range of products covering a variety of industries. Sandhills Publishing is located in Lincoln, the capital of Nebraska, and benefits from the quality of life and strong work ethic traditionally associated with the Midwest.



# PROCESSOR®

## Subscribe Today!

Call (800) 334-7458

## Subscribe Online!

Go to [www.processor.com](http://www.processor.com)

Data Center | Power | Cooling | Storage  
Wireless | IT | Networking | Racks  
Servers | Security | Flooring

Processor  
is the industry's most  
comprehensive source for:

- Snapshots of new data center and IT hardware and software
- Rundowns of major industry news
- Information on manufacturers and resellers
- Tips, strategies, and advice from experts in the field

